A new system of practical domestic economy founded on modern discoveries, and the private communications of persons of experience.

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PREFACE.

THERE is, perhaps, no subject so much talked of, or so little understood, as that of DOMESTIC ECONOMY.

When FRANKLIN wrote "To Save is to Gain," he left a text for future writers capable of much expansion. To SAVE is one thing, TO ECONOMISE is another. Absolutely to forego expense, is to preclude enjoyment; but to economize expenditure, is to unite enjoyment with prudence.

The ultimate point of saving money is often best attained by a route not apparently the most direct; nay, sometimes by an expenditure which, at first sight, may seem superfluous. A man, to save time, may begin building a house, without plan or preparation; but how much time will be afterwards wasted, and temper expended, in the endeavour to render it comfortable and convenient!

TRUE ECONOMY consists not in saving, merely, but in adapting every thing to its specific use: by which much is enjoyed at a small expense.

It is in this that the real secret of Economy is to be found. Any man may retrench his house expenses, if he please, by dispensing with a necessary meal; but will the saving recompense the deprivation? May not that very

attempt at economy produce other and far greater expenses? And will not he be the true Economist, who seeks to preserve appearances, yet contrives to save, even whilst he enjoys?

Again, as to the situation most favourable to Economy: some may think it better practised in France than at home. But instead of going to the country of a rival (for such it always must be) to live cheap, is it not better to practise the art of living cheap in our own?

Who need go to France to avoid observation whilst aiming at Economy, when they can avail themselves of greater retirement in their native country? But "*house-rent* is cheap in France,"—and so it is in Devonshire, or in Cumberland—but "*wine* also is cheap in France!" and so may the retired Economist in England drink wine of his own making, from the foreign imported grape or raisin, much better than, and equally cheap with, the *vin ordinaire* of the restaurateur, or the ill-prepared refuse of the ordinary vintage.

But education is cheaper in France than at home!—this we doubt; provided the parent can suppress his vanity, and abstain from sending his boys to RUGBY or ETON—and why should we be more ashamed of a cheap school in England than in France, especially when we recollect that one country affords an *English*, the other a *French* education? If a parent educates his offspring from infancy to boyhood in a French provincial town, how can he at a future day expect from them either patriotic exertion or self-devotion for a country with which they are not connected by a single idea of juvenile recollection?

But if the subject is so serious in regard to boys, how much more so to females? Will the whiffling, sibilant Parisian pronunciation be a counterbalance for the want of those mild virtues that spring up round an English fire-side? We put the question pointedly; let our fair countrywomen answer it to themselves candidly.

It is chiefly for THEM that we have undertaken our task, to unite elegance with economy, not only in the highest, but in the middle walks of life; and to shew that good old English housewifery is still a good old English virtue.

But we confine not ourselves to the old family receipt book. We are aware that one great object of *Philosophy* is to improve our condition in this world, as Religion is to fit us for the next: we therefore feel the propriety of bringing philosophy forward in the most popular shape. In fact, there is not a single point in DOMESTIC ECONOMY that does not depend, more or less, upon philosophical principles. But the gay world is terrified at the name of philosophy in a didactic work, though pleased with it in a lecture-room; and why so?—simply because, like freemasonry, it has too long been the fashion to make it both incomprehensible and alarming.

Let it be our task, then, to produce a familiar application of modern philosophy; or rather to display the art of making philosophy useful: and, in order to do so, it has been our object to avail ourselves of all the most recent discoveries that can be applied to the improvement of human life. If it requires the power of nature to produce a feather, we should not be ashamed to apply even

the greatest of her forces, if necessary, in arranging that feather, and in making it useful or ornamental, as may be required.

In preparing this NEW EDITION for the press the whole work has undergone a thorough revision, in which we have availed ourselves not only of the opinions of numerous judicious friends, but also of the hints, suggestions, and even censures of Periodical Criticism. Among the various ADDITIONS, it is hoped that the series of ECONOMICAL FAMILY ESTIMATES will prove particularly acceptable. Being chiefly derived from experience, these Estimates and the Observations thereon may be relied on with confidence. As they gradually increase in amount, they are applicable to families of every description; and will, it is presumed, afford important hints and much useful information to all who are desirous of properly regulating their Establishments, and of enjoying the greatest possible portion of the conveniences, comforts, and elegances of life, that their respective incomes will admit of.

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PRACTICAL ESTIMATES

OF

HOUSEHOLD EXPENSES,

Founded on Economical Principles, and adapted to families of every description ; calculated according to Income, and progressively increasing by regular and systematic graduations, from One Guinea per week to 5,000l. per ann. and upwards.

A

PRACTICAL MANUAL,

&c.

SECTION I.

RESIDENCES.

The DWELLING-HOUSE—*Preliminary Considerations*—*Style*—*Safety*—*Architecture*—*Situation*—*Soil*—*Water*—*Materials*—*Chimnies*—*Roofing*—*Floors* CLEANLINESS—*Dry Rot*—*Inside Walls*—*Papers*—*Carpets*—*Furniture.* VENTILATION—*Air Funnels*—*Smoky Chimnies.* HEAT—*Stoves*—*Fire-lamps.* ILLUMINATION—*Gas-lights*—*Reflectors*—*Lamps*—*Chemical Ignition, &c.*

To ensure the certain and convenient practice of Domestic Economy, much depends not only on the style and situation of our family residence, but also on the arrangement of the building; on its capability of judicious alteration or extension when required, the actual state of its materials, and its facility of repair when repair may become necessary.

These are objects of the first consideration to all who may be either about to build or to rent a

habitation; and we may help our readers to economize, if the following hints should induce them to pause and consider before they adopt a plan or hire a house; and to reflect that a little time, spent in careful investigation at the outset, may ultimately produce a considerable saving both in time and money: whilst a hasty choice might have forced them to increased cost in correcting a faulty plan; or, to the trouble and vexatious expenditure connected with the removal from an inconvenient residence, perhaps, after months of labour and dissatisfaction in fruitless attempts at a more comfortable arrangement.

These considerations are too often coupled solely with the query, "will the house suit me?" whilst another necessary inquiry, "shall I suit the house?" is forgotten.

This, however, is not so much a matter of fact, as a matter of *taste*—a word which has caused more useless expense in London and its vicinity, than would have formed a handsome sinking-fund for the payment of the national debt.—Nor would even this be a subject of actual complaint; provided such extra expenditure had tended to the encouragement of laborious industry, which, in a populous country, must always depend for its reward in a great measure upon the luxuries of the more opulent. But, instead of this, whilst the positive quantity of labour has been scarcely, if at all, increased, a non-descript class of buildings has been run up, neither ornamental in the exterior, nor convenient within, yet much more expensive to preserve in order than larger houses, whose absolute taxes seldom exceed, and sometimes do not equal, those of gaudy, ill-arranged, insignificant villas, with lawns of ten feet in front, and shrubberies which afford not shade even to a duck-pond.

In short, taste consists neither in the flimsy, expensive style so much in vogue, nor in the absurd saving of expense in roofing, which has produced so many cottages four stories high, between Holloway and Dulwich. Good taste will always be careful that the house and grounds, whether upon a large or small scale, shall be in due proportion with each other; that, as the mansion ought to harmonize in exterior and interior, both in regard to the arrangement and size of its apartments, so ought the out-of-door conveniences and ornaments, such as gates, paling, walls, rails, &c. to harmonize with the size and distribution of the grounds. Ornaments ill-placed, lose their effect; and, if too numerous, become a nuisance. Here then is a sure basis for present and future savings; if it shall be recollected, in preparing plans, that the great art required for a building of moderate dimensions is to proportion the decorations to the space they are destined to fill, so that they may not by their multiplicity, or disproportionable size, disfigure and encumber that which they were intended to adorn.

Whilst on this part of the subject, let us not forget the absurdity of applying the same species of ornament to all kinds of edifices, whether public offices, churches, buildings, or *mausolea*. As an idle boy at school acquires the bad trick of writing only from one copy, so an architect may become bigoted to his favourite ornament, and all this he may think in taste; but the world must judge whether or not it is a good taste.

If we look for the origin of the choice and distribution of ornament, as directed by true taste, we shall find it to arise from a judicious idea of the rich and simple beauties of nature. But if we look

for it around the metropolis, we might be tempted to suppose that expense, not taste, is the parent of beauty; were it not that the ugliness of the offspring, so misnamed, speedily calls us back to her real pedigree.

Too much expense has also been often incurred, both in town and country, in sacrificing to the ambition of producing novelty; without reflecting that a happy imitation is of more real value than a defective original, which, like an usurious bond, speedily doubles the principal, by annual charges. This is an useful hint for the *builder*, whilst even the *architect* may console himself with the reflection, "that to copy excellence in spirit and in character is at all times a test of no mean ability." Let *both* consider *what* it is, and for *whom*, they are going to build; let them consider that it will be an important saving in time and in expense, if, when the plan, as a plan for a good house, be perfect, they also reflect, whether the intended resident will suit the house.

If architectural taste be, as it has been well defined, a just relation of parts in forming a whole accordant with the use and purpose of the building; so may it be added, that it is also a just relation between the habitation and the occupant. Bad taste will, however, sometimes forget, in its fondness for ornaments, the original and obvious intentions of buildings, by affected imitations of something incongruous, or by paltry attempts at disguising particular objects, which, in fact, only render them more conspicuous, making the disgust counterbalance the convenience. Hence arise steeples upon stables, and Gothic battlements upon summer-houses, with Rialtos thrown across puddles which a lively frog would hop over.

There is also another very important point that ought to be sedulously attended to both in building and renting—the saving of lives in case of fire.

A correspondent of a weekly journal recently observed, that the present mode of building adopted by gentlemen in their country residences, is the best that could possibly be invented to give success to a fire: story raised over story, timber piled upon timber, and the kitchen underneath, bonfire fashion. He animadverts on the absurdity of having the nursery at the top of the house, while the parents themselves sleep one or two stories underneath. "What is the consequence," he continues, "in case of fire in the night? Why this—the children in the nursery have no chance of escape, the parents have very little, and that little is of course lost by their anxiously rushing up stairs for their children. Now, it appears to me, the sensible way to erect a house is, to make it only one story high, and let the children sleep on the ground-floor, and the parents in an adjoining room; let the kitchen be detached from the house, so that they may sleep in safety: and thus have a prospect of raising up a family with straight legs and bodies; for more than half the children we see crooked and deformed have been made so by accidents on staircases."

This, however, is, generally speaking, impracticable from want of space, and would be an unnecessary increase of expense, when the simple plan of dividing a house by party-walls in its centre, with double staircases, where there is room, and a clear communication between each, might be found equally efficacious, at least in all ordinary cases. But this part of the subject shall be noticed more fully under the head of *Domestic Accidents:* at present let us proceed to the great point of eco-

nomy which depends upon the judicious selection of style in regard to the conveniences it may afford, without any palpable necessity for an absolute departure from it in the making a house habitable.

If we really wish to imitate the ancients, we ought to adopt not only their classic style, but also their shrewdness and common sense, and not forget, that what we often introduce solely as ornamental, was with the Greeks and Romans an useful thing ornamented.

Porticos and piazzas are useful for shade and air in the warm climates of Greece or Italy; but are little wanted in front of a mansion where half the year is passed by the fire-side. In palaces, indeed, even in this cold climate, they may be allowable; or where ornament is really and appropriately the first consideration: but in houses designed chiefly for domestic purposes, they are worse than useless. How often does this rage for architectural ornament strike at the root of that income which would otherwise have been expended under its shelter! How many have been involuntarily led into frivolous, yet devouring expenditure, solely by taking a house unfit for them, doubling their taxes and their necessity for servants, whilst their inconveniences and expences increase in a mutual ratio!

It ought to be remembered, whilst we endeavour to keep the love of ornament within the limits of economy, that it is not quite impossible to combine the advantages of an English arrangement with all the beauty and grace of a Palladian or Vitruvian plan. Pure Grecian architecture, even as exhibited in its native soil, transcendently chaste and beautiful as it may be, is yet somewhat liable to the imputation of a monotonous correctness; consequently deviations from it, where their use is apparent, may pro-

duce beauty instead of incongruous deformity. But these deviations must be solely useful, and not ornamental; for though in Greece and Italy it is only necessary to keep off the direct rays of the sun, or the tempestuous shower, whilst the surrounding air is rather grateful than otherwise, whence came the high raised roof, the open portico, and the lengthened colonnade; yet was there no absolute incongruity on the introduction of that mode into colder countries, in attending to the necessity of filling up the interstices with solid work, so that the side walls actually support the roofs, rendering pillars, pilasters, and columns, totally unnecessary for any purpose but that of ornament. But in preserving unnecessary ornament, it must be considered, that real beauty in architecture, from the palace to the cottage, will always be most judiciously and most cheaply produced by discarding all that is superfluous, and bestowing decoration on that only which is really useful.

But if *Classic Architecture* has been misunderstood in its character and application, the *Gothic* has been and is likely to be much more so. Yet it is a term which minds of taste and feeling will admire, and consider as possessing a secret charm: we wish not then to shock their feelings, when we record that the term "Gothic," though sanctioned by habit, and having acquired a value from its connection with all those sentiments which arise in the breast on contemplating the castles of our ancestors, and the religious piles where devotion and superstition went hand in hand, was originally nothing more than a word of contempt, applied by the Italians on the revival of classic architecture, to express what we do by the term "barbarous:" the one being metaphorically drawn from the Goths of

ancient Europe, the other from the savage inhabitants of the northern districts of Africa.

Whilst endeavouring then to save money that might have been uselessly expended upon Gothic brewhouses and Saracenic pigsties, we may also encourage the beautifying the face of the country, in general, by investigating the most judicious adoption of situation, and the most economic mode of procedure, if taste, or fashion shall propel to the erection of a Gothic mansion, or to the remodelling of one already built, on the principle of sheer economy; inasmuch as money injudiciously laid out in an improper place, is money thrown away, or worse, since what is only lost may be forgotten; but the same sum raised into a monument of folly, is certain to expose the individual to the derision even of his most ignorant neighbours, in addition to his own vexation. The Gothic shows how the rules of classic architecture may be violated or forgotten, whilst in itself it has a character of originality which in its general and complete effects, surprises until we become enchanted with its influence. Hence, situations in which the Grecian style would be appropriate, are by no means fitted for the Gothic: nor must we combine the one with the other in the same building, since the regularity of Grecian architecture would be incongruous with the wild sublimity of Gothic vastness.

The Gothic often receives the most absurd misapplication from our forgetting that nothing ought to be Gothic but what existed, or had a counterpart in feudal times. For instance, we may have a Gothic library, but a Gothic hothouse would be an anachronism. Gothic walls with modern casements are also absurd, independent of their admitting too

much light into the interior; but when the casements are pointed, and filled with lozenged glass, particularly if of a green tinge, then the sombre tints modify the general light, and blend the ornaments of the interior, if due keeping be preserved, into a mass of exquisite richness. But the grand features of the Gothic are vastness, irregularity, and sublimity, especially in the castellan mode, which ought not to be blended with the cathedral, or ecclesiastical order; the height and extent of the edifice, and the vast masses of wall, unbroken either by cornice or window frame, or else so broken by buttresses and turrets, as to give those masses an appearance of much greater extent than they really possess. Where windows do occur in the castellan Gothic, they are always distant from the ground, always distant from each other, and always irregular in their disposition; but, with this impression on the mind, who can forbear laughing at those things called Gothic villas, and Gothic summer-houses, surrounded by the trim nicety of civic or suburban gardens and flower-plats, which line the roads in all directions within the limits of the short stages round the metropolis!

But having thus pointed out how to save money, by avoiding absolute expenditure upon the absurd and the incongruous, it may be expected that we shall also point out how money is to be saved where it may be fairly expended: science can never be better applied than in this department, since our real comforts are proverbially and very properly sought for at our own firesides: and we have, therefore, every inducement to direct all the means of philosophy to the increase of domestic happiness.

Yet our habitations in general, from the cottage to the palace, have hitherto been constructed with-

out any apparent regard to those principles that may afford the greatest comfort to the occupants; for whilst in the exterior the architect seldom aims at more than just proportion in outline, the disposition of the interior is entrusted to artists who, in furniture and decorations, seem only anxious about the taste and fashion of their labours; and whose productions are rather in the style of incumbrances than of convenience or utility: inasmuch as that, which was at first solely tolerated because it was fashionable, retains all its imperfections when that charm is gone, and the unfortunate possessor must either put up with want of comfort and want of fashion, or else incur a new expense in procuring new articles, of which the day of glory will in like manner fade away, prompting to new expense, or subjecting to renewed inconvenience.

We wish not, however, to stop the hand of luxury even in this. Where a superabundance of wealth prompts to an expenditure that gives support to industry, we hail it as a blessing to a community so populous as our own—as a saving, a material saving in fact to the public at large, since sums thus expended, if withdrawn from circulation, would consign thousands of families, especially in the metropolis, to idleness, beggary, and the poor's rates.

The first object to be considered, either in building or renting a habitation, must be its site. It must be remembered, that however well cleared and cultivated a country may be, yet the current of air, passing over a large tract of land, is never so pure, or at least so healthy, as that which passes over the ocean.

Altitude, so long considered as securing the purest air, is now proved, by chemical experience, to be of no importance in itself. With respect to

moisture or dryness, indeed, altitude is an object of importance; as even in the driest soils, though the valley is warmer than the hills, yet there the transitions from heat to cold are greater, and there will always be the greatest portion of moisture in the air, unless there be a thorough vent in the quarter of the most customary winds. Gentle rising grounds, not the highest, are then the best situations upon the whole; for in moist vallies we inhale more hydrogen with the atmospheric air, and if elevated above all, the house is exposed to every blast, and must be colder than is always agreeable: though even there, great melioration may be expected from planting for shelter, and from active cultivation in the immediate vicinity, which always have a more extensive effect than would readily be imagined.

If the neighbourhood of the metropolis be the field of the builders wishes, it will be proper not only to consider what the place is, but what it may become. If a man retires a short distance from town for fresh air and cheerful meditations, he will not choose the immediate vicinity of a burying-ground; but how often does it happen that, although the man does not go to the burying-ground, the burying-ground comes to him; and that the pleasing cheerfulness of his retirement is thus broken in upon by an unwelcome visitant—but this is a grave subject: we quit it therefore for other grievances, such as the dye-vats, glue-frames, founderies, tan-yards, patriotic tea-manufactories, chemical laboratories, and other nuisances, which often tend to the manifest deterioration of those places towards which we are looking for an increase of our domestic comforts.

Every one who retires into the country will na-

turally be solicitous to know the quality of the soil, before he either purchases, builds, or rents. To ascertain the exact quality of land, requires considerable experience: but a general idea may be formed by the simple experiment of turning up a turf, pouring some soft water on it, and kneading it with the fingers, when a kind of adhesiveness will be perceived in proportion to its fertility. The depth of good soil may be found by digging small trenches in different places. If the soil dug from any trench, does not refill it, then the land is bad: if it fills up the space exactly, then the land is middling. But if the trench shall be not only filled, but heaped, then the soil may be considered as rich and excellent. It must be added, however, that this rule is not strictly applicable to stiff clay or marl.

On such a soil, and on a slight elevation to guard against dampness, a man may fix without danger of inconvenience; provided there be a proper supply of water, neither too much nor too little, and at all times under control.

Of all adventitious circumstances, indeed, perhaps the first is water, not only in regard to quantity, but to its chemical qualities. In building a house, therefore, in a new situation, it may be well first to choose the spot, and then to dig for a well; by which means the expense may often be saved of trying the foundation for that purpose merely.

To impress the importance of this consideration upon our readers, we may throw out a few chemical reasons for the necessity of examination, as well as a few of the simplest chemical tests for ascertaining the question, on which depends so much of the health and comfort of our household, and of domestic convenience and economy. Persons un-

acquainted with the chemical powers of water, as a solvent, may suppose that the effects produced by foreign matters, with which it may be impregnated, cannot be of any great importance. But a moment's reflection on what they feel after drinking hard water, or on the difficulty they experience in washing their hands with it, will convince the most incredulous that even a pint of water may contain that which is injurious to the human system. These hard waters always contain saline and earthy substances, and are invariably hurtful in diseases of the kidnies; besides being inapplicable to culinary purposes in many instances, and particularly so for brewing. Even at the tea-table they fail to extract the high flavour of the fragrant Chinese leaf; and in the wash-house they require the additional expense of vegetable alkalies to counteract their rigidity, and to neutralize their salts. For the kitchen, soft water is indeed invaluable, whilst hard water only spoils the produce of the garden.

Spring-water in some counties is much harder than in others, dependent upon the soil from whence it flows. How easily water may be rendered hard by the soil through which it percolates, may be drawn from the chemical fact that distilled rain-water can be made as hard as the hardest spring-water, by the addition only of one two-thousandth part of its quantity of foreign matter.

To judge of water, it may be observed that it is purest when flowing over granite or gravel, or those rocky soils which geologists call primitive. When first taken up, good water will be transparent; and the examiner is not to be content with looking through a drinking glass filled with the element, but ought to have the deepest ale-glass into which he may look downwards, when the slightest tinge

from extraneous substances will infallibly appear. Rain-water requires only mechanical care in its collection; and river-water, except in some few instances, will be always found sufficiently soft for any domestic purpose. The cheapest, and perhaps the readiest method of softening hard water, or of purifying river-water, is to boil it, and then leave it to atmospherical exposure; especially when the hardness arises from the solution of sub-carbonate of lime: but not so with sulphate of lime.

To ascertain this, there is an easy, yet perfectly chemical experiment. Dissolve some soap in strong spirits of wine, and pour a few drops into a wine-glass full of distilled water for the test, of which a few drops are to be poured into a glass full of the water to be tried. If the water be not quite pure, a turbidness will instantly shew itself, and the surface of the water, if left undisturbed, will soon be covered with a portion of feculent matter, manifesting the absolute degree of impurity, proceeding from the solution of earthy salts. Take another glass of water and pour into it half a tea-spoonful of a solution of oxalate of ammonia; then, if the water is unboiled, and a precipitate takes place, the impregnation is with carbonate of lime; and if it has been boiled and a precipitate ensues, then it may be considered that the sulphate of lime is present, and that the water will never be generally convenient for domestic purposes, without the trouble and expense of chemical purifications, which will render it useless also for culinary application. The absolute hardness of water may also be often ascertained by cattle or pigeons refusing to drink it.

Situation and the supply of water being thus ascertained, a judicious selection of which will be found in the course of a life-time to ensure a great

saving in health, in family anxiety, and in medical expenses; we may now examine the economy of the materials with which we mean to build, and even of the house which we may mean to rent, especially if on a repairing lease; not only with reference to the convenience of procuring them, but to the chemical qualities of those which present themselves in reference to the action of the atmosphere upon them, not forgetting their fitness for architectural beauty.

Upon a general principle then, we may lay it down as a maxim, that the outside walls should be formed of the worst conductors of heat; besides which their thickness must depend upon the durability of the material and its power of supporting the incumbent weight. Generally speaking, the materials should not be susceptible of the action of air or moisture; and, above all, they ought to be incombustible.

Well burnt bricks, made of good components, are the best materials in this country; not only for their durability, as manifested in the remains of Roman architecture, but for other advantages of considerable importance. They are worse conductors of heat than stone, and therefore brick houses are warmest. Mortar adheres more strongly to them than to stone. They absorb moisture readily, when applied to their surface, and therefore seldom present the appearance of damp walls, as in stone buildings, except where the mortar has been injudiciously mixed with sea-sand. We speak not, however, of the modern London bricks. They are of most perishable materials, like many others which may be seen to decay rapidly when exposed to the air, covered with a white efflorescence which chemistry shews to be a sulphate of magnesia, arising

from some species of clay abounding in their composition, and very susceptible of atmospheric influence.

Some persons consider stone as the only ornamental material, and where first expense is no object, there will certainly be an ultimate saving from its use; but it ought to be well ascertained to be capable of resisting both air and water. It is true, indeed, that stone in England is not so permeable to water as in other countries. In Bermuda, for instance, where the stone is a species of filter, a new house bears no proportionate value to an old one of the same size, whose walls have been saturated with repeated white-washings for a number of years, so as to have acquired an artificial impermeability. With us, however, several species of stone, exposed to the air, are rapidly destructible, sometimes crumbling to powder, although extremely hard when first dug from the quarry. In this class are all those stones which abound with clay, or alumine, which has so great an affinity for water as to absorb moisture from the air to the extent of destroying its own aggregation. Other species again lose their aggregation by an opposite cause; such as marbles of particular kinds, also crystallized carbonates of lime, or stones composed of an acid and earth combined with water, called the water of crystallization. Chalk only differs from marble in having lost that water, advancing thereby more rapidly to decay: which is also the case with several species of lime-stone, after aërial exposures, particularly when the air is frequently saturated with water in the presence of carbonic acid. Such are the Derbyshire caverns, which yield petrifactions and stalactite. Gypsum also, though durable when dry, is so easily soluble in a quantity of wa-

ter, that even if it were plentiful, it would be imprudent to use it. But the granite, the basalt, or whin-stone, and all stones consisting principally of silex or flint like the mill-stone grit, may be used with every prospect of permanence. In other countries, indeed, with a drier atmosphere, many of these rejected species will last for ages, though so destructible with us, as may be seen here in our edifices built with Portland stone; but the worst of these may be rendered more durable by casing with the new invented cements.

Mr. Randolph, of Richmond, in the United States, has recently announced the discovery of a cement which resists the action of water and fire, and which contracts additional hardness with time. The composition consists of two fossils of a mineral or volcanic substance. Two bricks joined together by this cement, were laid in water on the 1st of June, 1817; they were taken out in August 1818, and then formed a solid compact mass; the cement having grown as hard as the bricks. Another experiment was afterwards made by applying the cement to the surface of a piece of brick-work exposed to the air, and the result proved equally creditable to the value of the invention.

Several very economical inventions have recently been recorded at the Patent Office and in the philosophical journals of the day, by means of which all the beauty of stone may be imparted to a brick building.

That valuable property which the Roman cement is known to possess, of becoming in a short time as hard as stone, points out its peculiar eligibility for employment in buildings; and by combining it with other durable materials, in the form of bricks, and laying them in the cement in-

stead of common mortar, a building may be rendered literally a stone edifice, for the cement (when deprived of the water with which it is mixed to render it plastic, which is the case after a short exposure to the atmosphere) does actually become stone. These bricks being produced without artificial heat, retain the exact form of the moulds in which they are made, so that accuracy is preserved in laying them without much trouble, and much less cement or mortar is required than with any other kind of bricks. Pointing is not necessary either for use or beauty: and as water cannot penetrate them, they are an effectual preventive of damp walls. When laid in putty, or fine mortar, of which but little is required, they make excellent work, the joints being hardly perceptible. The expense of a front of these bricks will not be more than one of fine malm stocks when pointed; as, in consequence of their uniformity in size and shape, they will be laid in much less time than any other kind of bricks. Closers and arches are furnished at prices proportioned to the rest, so that no loss is occasioned by waste in cutting, which in other bricks is considerable.

Another plan has been proposed for forming blocks with bricks and cement, in the form of ashlar stone, and with all the appearance of that material.

This invention consists in uniting bricks together with Roman cement, or with any other mortar or cement that will set sufficiently hard, in the form of ashlar stones, which the patentee calls ashlar blocks. These blocks he coats, or stuccoes, on the external surface, with Roman cement, or any other cement proper for that purpose, in a mould or case so as to imitate any kind of stone ashlar,

and afterwards builds in walls in the same manner as stone ashlar is built These ashlar blocks form the outward surface or surfaces of the walls; the inside may be built in common brick-work. The patentee recommends that the blocks be formed with a tail for bonding them with common brick-work; but their size and form may be varied to suit the nature of the edifice, or the fancy of the builder. By this method of building, when properly executed, the walls will be free from those unsightly cracks so common in stuccoed buildings, and less pervious to moisture; they will look more like stone-work, and the building may be finished as the walls are carried up.

Another very ingenious invention has been brought forward, for fronting houses with a thin casing of real stone, at a rate not much more expensive than the imitative substitute.

The plan is first to prepare thin pieces, plates, or slabs of stone, of sizes to fit the sides and ends of the bricks, blocks, masses or lumps, intended to be used in the fronts of buildings. These pieces, plates, or slabs, being previously cleaned and wetted, are then placed in moulds; and Parker's cement, or what is more commonly known by the name of Roman cement, or any other proper cement in a fit state of moisture, is laid upon them, and is to remain till the cement be sufficiently indurated and united to the stone; or the cement may first be put into the moulds, and the pieces, plates, or slabs of stone laid upon it, and remain till the cement be sufficiently indurated and united to the stone. They are then to be taken out of the moulds and piled up, or placed in a proper situation for drying; the longer they are exposed to the atmoshpere the harder they will become; and in a few days, they will be hard

enough for use, without the application of artificial heat. The pieces, plates, or slabs of stone, need not be more than half an inch thick, but may be thicker or thinner according to the discretion of those interested in the work. The quality of the stone is best if somewhat bibulous or porous; and for this reason the patentee prefers Bath stone, but Portland or even marble may be applied if the cement be such as will cohere to the stone or marble. It is not necessary to use Parker's or any other cement without the admixture of any other materials; on the contrary, it will be advantageous in many cases to mix with it clean rough sand, small gravel, or even round pebbles.

We may also mention that a patent has been very recently obtained for certain improvements in the facing of exterior and interior walls of Gothic or other structures, built of brick or other material, with strong milled or sawn slates, bound and secured by mouldings, grooves, and tyes of cast iron, in such a manner as to have the appearance when sanded, of finely wrought stone-work in ornamental pannels or otherwise; with ceilings of corrsepondent tracery, form, and character, of the same materials, which may be supported by pointed arches, rising from single or clustered columns of cast-iron.

This patentee likewise recommends plans for capping buttresses of Gothic architecture with highly enriched pinnacles of cast-iron only, which being connected by metal, with the spouts also of metal, and carried down to the ground, form conductors for the protection of lofty buildings from the effect of lightning; also for a spiral stair, of cast-iron, of a light and simple construction, which may be carried up, or inserted within the corner of a buttressed tower wall, or in the

cylinder of a small turret; by which modes of facing, adorning, and constructing, churches, or other buildings of pure Gothic design, may be erected of brick, and finished with light ornamental carved work, of appropriate taste and elegance, at less expense than if wrought in stone, and in materials that will endure.

In forming the walls, due attention must be paid to the windows, so as to afford sufficient light and air—two things essentially necessary for the health and eye-sight; and though, to lessen the window tax may be a very proper part of domestic economy, still it ought not to be forgotten that although the deterioration of the general atmosphere by the breathing of all living creatures is not a moment's consideration, yet the effect of human respiration on those atmospheres which we inhale in our habitations, and particularly in crowded apartments, is not to be overlooked. This, however, shall be more particularly noticed under the head of Ventilation; and we only remark, at present, that provided the diminution of windows is not carried beyond healthful propriety, it may be rendered essentially conducive to the beauty of Gothic buildings.

Our ancestors were profuse of timber in the erection of their houses, whilst we now find it the most expensive article in regard to price, to say nothing of the enormous loss occasioned by the purchase of timber badly seasoned, rendering sumptuous palaces and more lowly residences alike uninhabitable from the dry rot

To save in timber, we must therefore say, that the best will be found the cheapest; and, as an assistant in that economy, we may record a pre-

paration recommended in a foreign publication, where it is said to be more advantageous than soaking the wood in a solution of salt. Take three parts of slaked lime, two of wood-ashes, and one of fine sand: sift the whole; add as much linseed oil as is necessary to reduce the composition, when well mixed to such a consistence that it may be applied with a brush. The wood requires only two coats; the first may be thin, but the second as thick as the brush can lay it on. This coating, when well prepared, is represented as impermeable to water, and able to resist the influence of the weather, and the action of the sun, which harden and render it more durable.

It has been proposed, when the price of oak timber is high, to substitute mahogany in shipbuilding: and there might be equal economy in its substitution for purposes of domestic architecture.

Under the head of Ventilation we shall notice the various modes of curing smoky chimnies in habitations already built; but it will be appropriate here to record some of the cheapest methods of guarding against such inconvenience whilst a house is in the progress of erection or repair. The common causes of smoky chimnies are either that the wind is too much let in above at the mouth of the shaft, or else that the smoke is stifled below; also they may proceed from there being too little room in the vent, particularly where several open into the same funnel. The situation of the house may likewise affect them, especially if backed by higher ground or higher buildings.

Several artificial modes of regulating these apertures, according to circumstances, have recently been proposed and patented: one of these plans

as described, consists of two sides, or parts, to form the back coverings of a fire-place, fixed on the top of the hobs of the grate or stove, at the back part of the same, extending from about the back of the stove or grate each way, till they reach the chimney jambs. "The covings are connected at bottom and top, behind the back of the grate or stove, with either a fixed or moveable bar, in order to admit the sweeper to pass freely into the chimney, or for any other purpose. In the covings, about straight with the under side of the top fixed or moveable bar, is a register, blower, or door, to serve as a ventilator, if required; and on the covings are placed flutes, astragals or beads, or both, to receive the second part, consisting of a register, blower, door, or shutter, on both sides, shutting when closed, against the top and bottom fixed or moveable bar. On the top of the covings, and to the top bar, hang one or more register or blower, extending from wing to wing of the chimney, against the breast of the chimney, and from the breast of the chimney, to be raised or elevated by degrees, as may be required, by a screw or otherwise.

"The register thus hung, will, when shut up, square with the front of the jambs; and intersecting with, or meeting, or folding against the back covings, form a right angle, and a square hob, and will, when moved forward towards the fire, or centre of the fire-place, into the grooves, or against the astragals, and in and on the back covings, contract the opening of the fire-place, and constitute a variety of bevel hobs. The front register being brought forward from its bevel situation nearly flush with the stone or other jambs and mantle, to which it may be attached, will close or shut up, and thereby constitute a register, blower, or fire-

screen in the front of the fire-place, from which it may be affixed or hung to, in front and on each side also."

Another mode has been proposed for the cure of chimnies already built; which is cheap, and easily put up whilst building, or when repairing. The apparatus is strong and simple, all of cast iron, and may be used with any grate. It consists of a long upright back, as high as the mantel-piece, with open perpendicular ribs behind the fire-place, the height of the grate. This back divides the vent into two branches, which are opened or shut at pleasure, by means of a damper in the throat of the chimney. The damper is enclosed in an iron case, or box, of an oblong square form, and is half the breadth of the box, having ends the whole height of it, so as to continue the contraction to the top of the box, whichever branch of the vent may be open. The box is supported by arms from the back of the grate, and the damper is worked by a handle, which has a knee to it, to let it come out under the breast of the chimney, with a brass nob on the end of it; and has a neat appearance. The sides of the chimney are finished in the usual manner, with cast iron, brass, or steel plates; and the corners are neatly built up, so as to leave no access to the air, unless through the branch of the vent. The back of the chimney, opposite to the fire, is lined with fire-brick, or fire-tile, to resist and throw back the heat; and there is a sliding shutter at the bottom of the branch of the vent behind the grate, which may be drawn out when the grate is cleaned, to allow any ashes which may have got into it through the open ribs to fall down, and be taken away.

In the article of Roofing much may be saved by

diminishing the extent of the ground-plot, and raising the house one or two stories higher; but the amount of that saving will scarcely counterbalance the increased inconvenience, to say nothing of the greater danger to human life from fire and other accidents. Where ground then is not an object, the mere saving in roofing is scarce worth attending to, especially as due attention to the materials used will guard against frequent repairs. To act on the difference of price between tiles and slates will ultimately be far from economy, when we consider the more frequent repairs required in tiles; but then the slates must be judiciously selected, otherwise they ruin the strongest roof frames. When slates are only so far porous as to admit of moisture, without absolute percolation, a bed is formed for vegetation; and moss and lichens, with other parasitical plants, soon make their appearance. In summer this may not be considered as an inconvenience, but, in some instances, as a picturesque ornament; in winter, however, the case will be different, for where moisture has been absorbed, a sudden frost will infallibly split the slates into shivers. Again, when slates are so porous as to allow the rain to percolate, the wood-work must become rotten, and the entire roof soon useless.

The first criterion of slates may be judged of at a glance; for all that is required is that the slates shall be thin and of a smooth surface, such being most impervious to the weather. If a more accurate test be wanted—lay a slate in an oven until perfectly dry; weigh it, and then immerse it in water, where it must lie for some time. Let it then be taken out, wiped carefully with a dry cloth, and weighed—it will be evident then that those

slates which thus acquire the least additional weight must be the fittest for domestic purposes.

The absolute strength of a slate, in regard to brittleness, may be tried by balancing it on the finger, and striking it with a hammer. If the tone is clear and sonorous, the slate may be considered firm and elastic; if dull, it ought to be rejected. Where slates are very full of pyrites, it may prove a fair objection to them; for it often happens that the decomposition of the pyrites, by the atmosphere, leaves holes in the slates, the wet proceeding from which being attributed to other causes, repeated repairs are had recourse to without effect; as the damaged slates, being sound in appearance, are again unconsciously applied by the workmen. Generally speaking, the Welsh slates, especially those from the Penryn slate quarry, are good: but the bluish-green slate from the Westmoreland quarries is considered better; with this difference, however, that being of a smaller size, there is some slight additional expence in preparing and laying them on.

A plan has lately been proposed, and a patent granted, for covering roofs with iron. The mode is simple. After the framing of the roof has been constructed of the usual materials, it is covered with plates of sheet iron, or other fit metal or material, having the borders turned back so as to form hitches or laps. These hitches, on the upper parts, or edges, should be made to turn outwards; and such as are on the lower parts, or edges, inwards; so that the inward hitches of the one drop into, and hold in the outward hitches of the other.

Where buildings are wanted for temporary purposes, a quick and cheap, as well as durable mode

of forming a roof may be adopted by dipping sheets of coarse paper in boiling tar, and nailing them on boards or laths in the same manner as slates. The whole is then painted over with a mixture of pitch and powdered coal, chalk, or brick-dust. This forms a texture, which completely resists all kinds of weather, for a great length of time, without requiring repairs. As the roof is made to rise not more than two inches in a foot, the quantity of timber required is much smaller than for any other mode.

In regard to Flooring, the use of plank is so congenial to our habits of comfort and cleanliness, that we shall be unwilling to recommend any attempt at economy in that article, except in the offices, where floors, not combustible, though laid on combustible materials, might often tend to check the progress of flame. But whenever taste or convenience leads to the turning of arches in an under story, the floor immediately over it may always be laid with some incombustible material; the best and readiest of which is the composition called plaster of Paris, the materials for which are abundant in England. Large bricks, well burnt, might often be adopted with propriety, even if laid upon wooden joists; or the process mentioned for fronting houses might be applied for making paving-blocks or slabs, in the same manner as the faced bricks, by laying the thin pieces, plates, or slabs, of stone or marble, at the bottom of the mould, and applying the cement or composition upon them.

In addition to the purposes for which Roman cement is commonly employed, it has been found that a portion of it mixed with an equal quantity of coarse sand and water, and applied to walls or floors, forms an effectual barrier against rats.

A cheap flooring material has long been used in Italy, which might be applied with great propriety to many domestic purposes, especially in the erection of cottages, or porter's lodges, instead of the earthen floors sometimes used. This composition consists of nothing more than fine clay tempered with ox-blood, which soon becomes hard, smooth, and glistening enough to be even ornamental, if applied to walls. It has also been proposed to form floors of small clean rubble, or pebbles, in the following manner:—To any quantity of recently calcinated lime, add bullock's blood (that of any other fresh killed animal will do equally as well,) in the proportion of two parts blood to ten parts lime; the mass should then be beaten up, as mortar is made, adding water in small quantities from time to time, till the whole assumes the consistency of thick paste, when it may be laid smooth upon the rubble. The lime should be exposed to the action of the atmospheric air as little as possible before it is saturated with the blood: it may, however, then be kept some time, and when wanted for use it must undergo the operation of beating up and watering.

A word only remains to be said on the ornamental materials required, a great variety of which may be found, the produce of our own country.

The exquisite beauty of the Devonshire marble, of which new varieties are daily discovered, is fast gaining ground on the admiration and taste of the discerning and munificent.

From Anglesea also, the most beautiful specimens of serpentine, now known by the name of Mona marble, may be readily and cheaply procured. It is in some respects superior to Italian marble, being more durable, and less liable to be

injured by scratches. The colour is believed to be permanent, and the polish is very fine; and it may be had in slabs or blocks of any required dimensions.

The Kilkenny marble may also be adopted, though of a sombre grey or deep black, in preference for cheapness, nay, perhaps for beauty, to many of the Italian marbles. These are important considerations, when we reflect that the chance of warfare may sometimes render a fashionable foreign marble unattainable. During the force of the Berlin and Milan decrees, the price of foreign marbles rose to an unprecedented extent; that of pure statuary marble being as high as seven pounds per cubic foot, and the others in proportion. But such extravagance is absurd, while we have the beautiful Petworth marble from Sussex; the Perbeck and Babbicombe marbles from the West of England; and a very fine species of Scottish marble, equal in beauty and goodness to the famed Pentelic marbles of antiquity, considered as yielding only to the Parian. This marble comes from the vicinity of Perth, and is known by the name of Glen Tilt.

Any of these marbles may be cheaply imitated by means of a mixture of a burnt gypsum, or alabaster and quick-lime well powdered, and tempered with glue or isinglass.

The different imitations of foreign woods, which have within a few years been introduced with much success into our houses, will be found to make a cheap and beautiful variety in the decorations of our doors, mouldings, and furniture. The plane-tree wood is the best for this purpose, as it is beautifully veined, and easily polished. The surface must be rendered perfectly smooth, and then

rubbed with diluted nitrous acid ; after this, take one ounce and a half of dragon's blood, dissolved in a pint of spirits of wine, and one third of that quantity of carbonate of soda, all properly mixed together and filtered ; lay it on the wood with a soft brush, repeat the operation a few times, and the wood will assume the colour and polish of fine mahogany ; and should the surface occasionally become dull, a little cold drawn linseed oil, will restore it to its brilliancy. Elm and maple for the boards of apartments may be easily made to resemble mahogany, by washing their surfaces with aquafortis diluted in water, and when dry rubbing them with a mixture consisting of one drachm of dragon's blood, half a drachm of alkanet, and a quarter of a drachm of aloes, dissolved in four ounces of proof spirit : the quantity made must, of course, be determined by the extent of the surface which is to be covered, taking care only to observe the proportions here given.

Having thus prepared the house for habitation, the next point of general direction is in regard to

CLEANLINESS.

In order to proceed methodically, we shall begin literally at the foundation, and first notice the most important enemy to cleanliness that we have to contend with, and which ought, therefore, to be sedulously guarded against, even if it did not affect the very duration of our residences—we allude to the *Dry Rot.*

This destructive visitant, in dwelling-houses, generally grows or originates in the cellar. If persons *white*-washing cellars will mix as much cop-

peras with the wash as may give it a clear yellow hue, and repeat this every year, they may prevent the dry-rot, or stop its progress if it has already begun. This is an easy and cheap experiment.

At the same time we particularly recommend the investigation of the principle to our indefatigable chemists; as the saturation of wood in a weak solution of copperas, for joists, beams, rafters, and floorings, might be resorted to with propriety, in the erection of new buildings, and secure them from a secret and most destructive enemy. Other processes of saturation are to soak the wood in lime-water, suffering it to dry, and then applying water in which there is a weak solution of vitriolic acid; or to wash it with a strong solution of potash, then with pyroligneous acid, in which the oxyde of lead or iron has been dissolved; and finally, with alum water.

The prevalence of the dry rot in the timber used in this country, whether it be from the changeable nature of the climate, or from the carelessness of builders in exposing it, without proper seasoning or preparation, to the influence of an unequal temperature on different parts of the same beam, is notorious. In America, the trees are barked a year or two before they are cut down: this process is supposed to season the wood effectually, and it is certain that the American timber is by no means so liable to dry-rot as the timber in our own country, which is not barked until after it is cut down.

It is calculated on an average, that every ship in his Majesty's navy, and every merchantman trading to the East or West Indies, or any other hot climate, is, in consequence of repairs made from time to time by taking out decayed planks and

replacing them with new, nearly re-built in the course of fourteen years; and, with respect to the navy alone, it is computed that a saving of twenty millions would accrue to the government in that period of time, during a season of warfare, could a remedy for this disease be found. In the magnificent edifices of our nobility and gentry a discovery of the dry-rot has often, a very short time after their erection, nearly doubled the amount of their original cost; and whilst the palace of the Alhambra in Spain has proudly stood a thousand years, though chiefly constructed of timber, our noblest structures are frequently threatened with irretrievable decay in less than half a century from their being raised.

No piece of timber, however sound in its original constitution, can stand in a difference of temperature in the same instant without injury; that is to say, one part wet and another dry; any more than it can, for any length of time, support the variations of being throughout alternately wet and dry.

Now, in boarding kitchens and other rooms on the basement story, three sides of the joists and the lower face of the flooring are generally bedded in earth so moist as to amount to absolute wetness; whilst the upper sides of the joists and the outer surface of the flooring are perfectly dry, and exposed to all the heat of a large fire, and a temperature proportionally high. The consequence is, that joists and floorings, however sound when they are laid down, generally become rotten in a few months; and that there is scarcely a house to be found in which a tenant has not, in the course of ten years, to lay down a new floor in his kitchen, and sometimes even to do it twice

in that period. It follows then that the ground should be prepared with gravel, chippings of stone, refuse of lime-kilns, and other dry substances, which should be also well beaten down before the planks are laid; the planks themselves should be steeped in a strong solution of vitriol or alum, and when they are dried, the side next to the earth should receive a coat of tar, or common paint: thus prepared, they will resist every species of damp so effectually, that the person who lays down a floor according to these directions, in a cellar or kitchen, will have the satisfaction to think that in all probability he will never be called upon to do it again in the same house.

When *Walls* are so damp as hitherto to have been considered incorrigible, we must not despair. An ingenious patentee has recently invented a remedy, which will produce a considerable saving in regard to paint and stucco where repeated repairs have formerly been found necessary. The mode proposed is to line the walls with sheet lead, rolled to extreme fineness, and worked into breadths, so as to be fixed up like paper hangings, fastened also with copper nails; thereby to check the passage of moisture either to stucco, or to common plaster intended for papering or wainscot.

If this be thought too expensive, a cheap mixture may be adopted, consisting of one gallon of tar and a quarter of a pound of common kitchen-stuff, or other offal fat, boiled together carefully for about twenty minutes until intimately amalgamated. Whilst hot, add to it a powder consisting of one third of finely pounded glass, and two thirds of well dried and sifted slaked lime,

working up the whole until of the consistence of common plaster, which must be laid upon the walls in dry weather, giving two or three coats according to circumstances. When thoroughly dry, it forms a basis of stucco, or for the usual coat of plaster to receive either paper or distemper painting.

We can also recommend, as an improvement in refitting apartments, even where dampness has not manifested itself, a very useful water cement or stucco, the method of preparing which is as follows: take fifty-six pounds of pure coarse sand, forty-two pounds of pure fine sand, mix them together, and moisten them thoroughly with lime water; to the wetted sand add fourteen pounds of pure fresh burnt lime, and, while beating them up together, add in successive portions fourteen pounds of bone-ash; the quicker and more perfectly these materials are beaten together, and the sooner they are used, the better, as their induration is extremely rapid.

When well dried this stucco may be very cheaply coloured in distemper by the following preparation. Take a quart of skimmed milk, half a pound of burnt chalk, or very fine quick-lime, a quarter of a pound of painter's oil, adding a pound of Spanish white, or finely powdered ochre of any colour wished for; and proceed to mix them in the ensuing manner. Dip the lime in water, leaving it when drawn out to the action of the atmosphere, which will speedily reduce it to a fine powder. Put the lime into a clean well-burnt earthen vessel, pour on it a little milk until it becomes fluid, then add a little oil, stirring the whole up with a wooden spoon or spatula; add the remainder of the milk and oil alternately,

concluding with the colouring matter previously amalgamated with a portion of the milk.

If the mixture is intended to be white, the purest and most colourless oil must be used; but if red, blue, brown, or yellow are wanted, then the common linseed oil will answer the purpose, as it seems to disappear as soon as mixed with the milk and lime. In adding the colouring matter great care must be taken not to pour it into one spot, but to spread it over the surface of the liquid, and to mix the whole as rapidly as possible; otherwise it will be rather difficult to bring the whole mixture to an equality of colour. Ten minutes will be sufficient to mix as much as will paint all the inside walls of a moderately-sized mansion; but the quantity here mentioned will not serve for more than one coat to about twenty-four square yards.

Where the plaster is previously in good order, and not partially discoloured, one coat will be found sufficient for halls, staircases, or ceilings; but when used for wainscotting, instead of paint, two coats will be necessary, and which may be laid on almost immediately, as it is perfectly set and dry in the course of an hour; becoming not only more solid, but also much handsomer than any other modes in common use, requiring less labour and no fire in the preparation.

When the walls upon which this colouring is to be applied are not in a very perfect state, and appear to require the assistance of the plasterer, a cheap substitute may be found in laying on a common kind of wrapping-paper, which will receive the mixture with great facility.

Another point of saving may be found in the adoption of the newly-invented washable paper-

hangings: and it must not be forgotten that old furniture paper may be very readily cleansed by the application of stale bread, taking care to rub the paper down in one direction:—a half quartern loaf should be cut into about four pieces, and the soft side of the bread applied.

We have seen a recipe in an American paper, to make a very beautiful paint for the walls of staircases and lobbies, the cost of which is less than one-fourth of that of oil colour, and the beauty far superior:—

Take four pounds of Roman vitriol, and pour on it a tea-kettle full of boiling water; when dissolved, add two pounds of pearl-ash, and stir the mixture well with a stick until the effervescence ceases, then add a quarter of a pound of pulverized yellow arsenic, and stir the whole together. Let it be laid on with a paint or white-wash brush, and if the wall has not been painted before, two or even three coats will be requisite. To paint a common-sized room with this colour will not cost more than twenty shillings. By increasing or diminishing the quantity of arsenic, various tints of pea-green, and of apple-green, may be produced.

An important point in domestic cleanliness is to guard against the filth produced by chimnies which are often not thoroughly divested of the soot which lodges near the fire-place, even when the chimney itself is not absolutely foul, especially in the country, where the attendance of a chimney-sweeper cannot always be commanded: an ingenious gentleman has recently offered a plan for that purpose, to which he has also called the attention of the Society for abolishing the practice of sweeping chimnies by means of climbing-boys. He pro-

poses that the top of each chimney shall be furnished with a pot somewhat in the shape of a bell, underneath the centre of which shall be fixed a pulley, with a chain of sufficient length for both ends to be fastened, when not in use, to nails or pins in the chimney, out of sight but within reach from below. One or both of these ends should be adapted to the reception of a brush of an appropriate construction; and thus by this simple contrivance, masters and mistresses might have their chimnies swept as often as they pleased by their own servants, with very little additional trouble to the latter.

Where painted wainscot or other wood-work requires cleansing, fullers' earth will be found cheap and useful: and, on wood not painted, it forms an excellent substitute for soap. Where extreme nicety is required, use a mixture of one pound of soft soap, two ounces of pearl-ash, one pint of sand and one pint of table-beer. Simmer these substances in a pipkin over a slow fire, and let them be well mixed. The mode of application is to put a small quantity in flannel, rubbing it on the wainscot; wash it off with warm water, and dry thoroughly with a linen cloth. Another method of cleaning white paint is by grating potatoes to a very fine pulp, in the proportion of four to every quart of water: the whole must be well stirred, and then suffered to settle, when the liquor may be poured off, and a sponge dipped in it for use.

Oil cloths are a great improvement in modern furnishing; but they are so expensive that they demand considerable care to preserve them in their beauty and freshness. They ought never to be wetted, if it can possibly be avoided; but merely

to be rubbed with a flannel, and polished exactly like a mahogany table, with a brush of moderate hardness: by this simple means the fading of the colours and the rotting of the canvas, which are inevitably attendant upon oil-cloth being left in a state of moisture or dampness, are entirely avoided.

Fullers' earth may also be applied with great success to the cleansing of carpets, even the finest Turkey or Brussels, according to the following mode. Beat the carpet well, then stretch it out and cleanse it with a pretty hard brush, dipped in soft water, in which bran has been boiled for some time. Whilst wet, rub the carpet over with fullers' earth, laying it in the sun to dry, and repeating the process two or three times. The carpet must then be beaten until the fullers' earth be wholly expunged, next well rubbed with a soft brush dipped in alum water, and suffered to dry in the shade; when the whole surface, if not too much worn, will have all the appearance of newness, and the colours be nearly as bright as when first purchased.

The Cleaning of Furniture forms an important part of domestic economy, not only in regard to neatness, but also in point of expense.

The readiest mode indeed consists in good manual rubbing, or the essence of elbows, as it is whimsically termed; but our finest cabinet work requires something more, where brilliancy of polish is of importance. The Italian cabinet work in this respect excels that of any other country. To produce this effect, the workmen first saturate the surface with olive-oil, and then apply a solution of gum arabic in boiling alcohol. This mode of varnishing is equally brilliant, if not superior, to that employed by the French in their most elaborate works.

But another mode may be substituted, which has less the appearance of a hard varnish, and may always be applied so as to restore the pristine beauty of the furniture by a little manual labour.

Heat a gallon of water, in which dissolve one pound and a half of potash; add a pound of virgin wax; boil the whole for half an hour, then suffer it to cool, when the wax will float on the surface. Put the wax into a mortar, and triturate it with a marble pestle, adding soft water to it until it forms a soft paste, which laid neatly on furniture, or even on paintings, and carefully rubbed when dry with a woollen rag, gives a polish of great brilliancy without the harshness of the drier varnishes. *Marble chimney-pieces* may also be rubbed with it, after cleaning with diluted muriatic acid, or warm soap and vinegar.

It must not be omitted, that the use of oak has been lately revived for the purpose of furniture; and, among the fashionable and expensive luxuries of the present day, has become not only the rival of some of the beautiful woods of distant countries, but, in point of expense at least, has acquired a high character. To establish this fact, it is only necessary to mention that a set of dining-tables, made of English oak by a London cabinet maker, brought the enormous sum of 600*l.* sterling. But the fall in the price of timber may now render the adoption of oak furniture an important point in domestic economy.

Polished iron work may be preserved from rust by a mixture not very expensive, consisting of copal varnish intimately mixed with as much olive oil as will give it a degree of greasiness, adding thereto nearly as much spirit of turpentine as of

varnish. The cast iron work is best preserved by rubbing with black lead.

But where rust has begun to make its appearance on grates or fire-irons, apply a mixture of tripoli with half its quantity of sulphur, intimately mingled on a marble slab, and laid on with a piece of soft leather: or emery and oil may be applied with excellent effect; not laid on in the usual slovenly way, but with a spongy piece of the fig-tree fully saturated with the mixture. This will not only clean but polish, and render the use of whiting unnecessary.

Brass ornaments, when not gilt or lackered, may be cleaned in the same way, and a fine colour may be given to them by two simple processes. The first is to beat sal ammoniac into a fine powder, then to moisten it with soft water, rubbing it on the ornaments, which must be heated over charcoal, and rubbed dry with bran and whiting. The second is to wash the brass work with roche alum boiled in strong ley, in the proportion of an ounce to a pint; when dry it must be rubbed with fine tripoli. Either of these processes will give to brass the brilliancy of gold.

Family clocks ought only to be oiled with the very purest oil, purified by a quart of lime-water to a gallon of oil, in which it has been well shaken, and suffered to stand for three or four days, when it may be drawn off.

The necessary repairs of furniture will point themselves out, when particularly required; but the economist will derive great advantage from an annual survey of the state of his residence in its various apartments. Repairs necessary, though not immediately apparent, will then be made in

good time; the various articles will thus be guarded, as it were, against ordinary accidents; and the saving will be considerable.

Let it not be forgotten, that the heating of apartments by stoves is destructive of furniture. It is expressly stated by Lambert in his Canadian Tour, that English-made furniture falls to pieces in the winter drawing-rooms at Quebec. The effects even of a low stove heat must then be pernicious, especially to piano-fortes and other musical instruments.

As the greatest domestic cleanliness will not always preserve a house from Vermin, it is of the utmost consequence to be able to get rid of them by artificial means.

Bugs in particular, may readily be destroyed by dissolving half a drachm of corrosive sublimate in a quarter of an ounce of spirits of salts, mixing it with one quart of spirits of turpentine. Let these be shaken well together, dip a brush in it, and wash those places where bugs are supposed to resort: this will remove them to a greater certainty than the usual modes of laying gunpowder in crevices and setting fire to it; or sprigs of fern, or wormwood and hellebore, or the decoction of lime and salt, or the more unpleasant mode of burning brimstone.

A decoction of bitter apple also, about sixpenny worth in a pint of water, is an easy and simple preventive to the increase of these insects. Crevices in walls, and the joinings between the boards in floors, ought to be rubbed over three or four times with a small brush dipped in the decoction.

Their number in beds also, may be much decreased by the use of what is vulgarly called a bug-basket, which can be had of any basket-maker

for about two shillings, and which is placed at the head of the bed, behind the bolster. The basket should be well washed twice a week, and the joints of the bedsteads cleaned with soft soap.

There is one species of vermin, which cannot be expelled too soon from a residence, when once they take post near the kitchen fire; for they will soon swarm thence, all over the house, to the utter destruction of clothes, hats, pictures, &c. It is pleasant, indeed, to hear the cricket 'chirping on the hearth,' but the cock-roach ought to be expelled. The remedy is short, and infallible. Take a small quantity of white arsenic finely pulverized, strew it on crumbs of bread, and lay it near the haunts of these insects: a few nights will suffice; but dogs, cats, and other pets must be kept out of the way of partaking of the fare.

It is a well ascertained fact, that hedge-hogs suffered to roam about a house infested with beetles, cock-roaches, or crickets, will soon destroy them; or a more artificial mode may be adopted by taking a large basin, or deep pie-dish, well glazed and smooth within side, and putting some sweet liquor, such as beer and sugar, or the grounds of wine into it, about half full. Place this at bed-time wherever they most frequent; putting pieces of wood on every side from the ground to the edge of the basin, or dish, to serve as ladders. These they run up, attracted by the sweet liquid, and drop into it; the smooth surface within allowing no hold for their feet, it becomes a complete trap, and in a short time the house will be cleared.

It has been said that the smoke of burnt fern will destroy flies, and that the leaves of the ash tree hung up in a room will attract them; but, perhaps, a more certain and equally humane method may be

adopted, and that too without the use of poison: take half a tea-spoonful of black pepper in powder, one tea-spoonful of brown sugar, and one table-spoonful of cream, mix them well together, and place them in the room on a plate where the flies are troublesome, and they will soon disappear.

Similar to this is a recipe which directs us to take a small quantity of gum arabic, and add to it a little honey, a little brown sugar, and some alum, mixed together; putting the whole in a basin or saucer in the place where flies are.

Either of these methods is much safer than mixing poison with saccharine substances.

For the destruction of rats and mice a safe but not a very humane method is sometimes used, by mixing ground glass with oatmeal: but this is much more cruel, and not more efficacious than a method recently found to answer, of cutting sponge in small pieces, and dipping them in melted dripping, to be laid where those vermin resort. If scented with a little anniseed it will attract the rats more readily.

The last subject to mention, is the cheapest and readiest mode of getting rid of unpleasant Vapours.

The drains in London are often extremely offensive, particularly to the inhabitants of cellar kitchens, to whose lot it seldom falls to breathe an air any way resembling "gales of Araby;" but the almost putrid effluvia that arises occasionally from these drains, may often be carried off with very little expense, simply by the adoption of what the bricklayers expressively term a stink-trap, and which even the clumsiest of the fraternity can set in half an hour.

The unpleasant smell of new paint is best removed by time and atmospheric ventilation: but

tubs of water placed in the apartment will act more rapidly; with this inconvenience, however, that the gloss of the paint will be completely destroyed by them. Unpleasant smell from water-closets, and all articles of furniture connected with them, may be modified by the application of lime-water, to which may be added the soap-suds that have been used in washing, which neutralize the pungently offensive salts: a little quick-lime put into a night-chair will destroy all disagreeable effluvia, and aromatic pastiles of the following composition may be burned with great success: take of camphor, flowers benzoin, powdered charcoal, powdered cascarilla bark, powdered Turkey myrrh, powdered nitre, of each equal quantities; beat them with syrup sufficient to form a mass, and divide into pastiles of a conical shape.

They may be mixed up with spirit of turpentine (the rect. oil) or any thing that is inflammable. Syrup does best, as it is most adhesive.

But if the disagreeable odour arises from causes connected with infection, a more efficacious fumigation may be produced by means of equal quantities of powdered nitre and sulphuric acid, or spirit of vitriol, adding the nitre gradually to the oil, placing the earthen vessel on a plate of hot iron, or a shovel, stirring the mixture with a tobacco-pipe, and carrying it to the various corners and crevices of the apartment: the operator must, however, be careful not inhale any of the fumes, which are extremely unpleasant.

We cannot dismiss the subject of cleanliness without briefly noticing, that nothing gives an air of neatness and respectability to a house, more than the cleanliness and brightness of the windows. In London, in some situations in the city particularly,

this is a matter of more importance than persons living in the country, in the full enjoyment of "garish day," can easily imagine. Nevertheless, this comfort in London can scarcely be commanded without an almost weekly expense in paying persons who are accustomed to the employment, for cleaning our windows, unless we choose to save our money at the risk of our servants' necks. We therefore strongly recommend to all persons who are building, or repairing houses, or to whom the cost of alteration is no object, to adopt the window-frames which have lately been advertised by an ingenious patentee, and which are made upon a principle that allows them to be turned, or taken out, with the utmost ease. The next important consideration is

VENTILATION,

without which even cleanliness would be of little use.

It is totally unnecessary, however, to expatiate upon the propriety of strict attention to this subject, further than to observe that the noxious qualities of an exhausted or impure atmosphere have long been known, and the importance of furnishing a continued supply of oxygen or vital air, frequently pointed out by some of the most learned chemists in ancient and modern times. The method of drawing off mephitic vapours by means of fire-pipes was, we believe, suggested by Sir Robert Moray, in 1665. These were formed of metal, about two inches and a half in diameter, reaching from the fire-place to the lower part of the house, and the ash-hole being closed up, the fire was supplied by the air intended to be drawn off.

The Marquis de Chabannès has also applied the principle of a forced ventilation to several of our public buildings: a plan, however, has lately been adopted by Mr. Tyer, in the ventilation of Hackney workhouse, which appears to combine nearly all the desiderata essential for this purpose; and is applicable to almost every species of building, at a comparatively small expense.

In the ceiling of the room intended to be ventilated, is formed an aperture of from six to nine-inches in diameter, into which is introduced a hopper or funnel, having its mouth level with the ceiling, and connected by a branch-pipe to the nearest stove. It is there made to enter a cast iron box, behind the back of the grate, from whence the ascending vapour is carried some distance up the chimney, the pipe terminating in a situation where the soot is least likely to fall into it. The air being thus rarified by its passage through the cast-iron box, will readily ascend the chimney, while that in the lower part of the pipe will pass on with a rapid current to restore the equilibrium.

The power of this species of ventilation may readily be ascertained by placing a lighted candle near the opening of the ceiling, when the flame will dart towards the aperture with the greatest rapidity.

Or a simpler process may be adopted, by making holes in the upper part of the walls, with sloping cases of paste-board or tin, to throw the current of air along the ceiling; and the aperture may easily be concealed by a picture judiciously placed. These processes are completely applicable to houses already built; but there is another and a more powerful mode recently adopted; yet with this drawback, that the ventilation of houses on

the new principles must be provided for previous to erection, as well as the warming of them with a due equality of heat at all seasons. At present we talk of the comforts of our fire-sides, when, in fact, in one respect, the fire-side is the most uncomfortable place in the house, owing to the usual construction of our chimnies, which favours the escape of smoke and vapour, of which a great part ought to be consumed, whilst the warm air is also carried off, and only replaced by the cold air, which finds an entrance through accidental crevices in doors or windows. It is in vain to expatiate on the comfort of sitting before a good fire, scorched on one side, and chilled by the cold air on the other; whilst the current of cold air entering into the wide-mouthed chimney, without passing through the fire, destroys its draught, and renders the combustion of the fuel so imperfect, that a considerable portion passes away unburned, or comes down again into the room in the form of smoke; producing one of the most annoying of our domestic evils. That which does escape from the top of the chimney forms an annoyance out of doors; but a great proportion adheres to the sides, and is one of the principal causes of the present necessity for climbing boys, which might entirely be avoided upon the new principle.

This new mode has also one great advantage, that its principles may be most usefully extended to water-closets, so that the person who enters them by the mere action of the door, and without any particular attention on his part, expels all the foul air; which may be at the same time replaced by atmospheric air, or by the warm fresh air from the house. The action of shutting the door in re-

turning supplies a fresh quantity of air, and produces also all the necessary action of the cisterns.

For these purposes a variety of tunnels and cavities will be required to be made in the foundation; which, unfortunately, cannot be conveniently done with houses already erected. When this is attended to, a proper temperature may always be preserved with less expense than by the common method of warming rooms; independent of the advantages of health and general convenience.

Though certainly expensive at first, yet ultimately this becomes economical; for one pound of coal, in the new stoves, will raise 5085 cubic feet of air through 59 degrees; and the purity of the air is always greater than when heated by steam, besides a considerable diminution in expense. Even in old houses this plan may be adopted in halls and staircases by means of flues, drawing the cold air to the stove and sending it back again by the flues, whilst the due degree of ventilation is kept up by local circumstances.

Observe that a northern aspect often produces a smoky chimney.

A single chimney is apter to smoke than when it forms part of a stack.

Straight funnels seldom draw well.

Large fire-places are apt to smoke, particularly when the aperture of the funnel does not correspond in size; for that, a temporary remedy may be found in opening a door or window—a permanent cure by diminishing the lower aperture.

When a smoky chimney is so incorrigible as to require a constant admission of fresh air into the room, the best mode is to introduce a pipe, one of whose apertures shall be in the open air, and the

other under the grate; or openings may be made near the top of the apartment, if lofty, without any inconvenience even to persons sitting close by the fire.

This species of artificial ventilation will always be found necessary for comfort, where gas is used internally, whether a fire is lighted or not.

Where a chimney only smokes when a fire is first lighted, this may be guarded against by allowing the fire to kindle gradually; or more promptly by laying any inflammable substance, such as shavings, on the top of the grate; the rapid combustion of which will warm the air in the chimney, and give it a tendency upwards, before any smoke is produced from the fire itself. If old stove-grates are apt to smoke, they may be improved by setting the stove further back. If that fails, contract the lower orifice.

In cottages, the shortness of the funnel or chimney may produce smoke; in which case the lower orifice must be contracted as small as posssible by means of an upright register.

If a kitchen chimney overpowers that of the parlour, as is often the case in small houses, apply to each chimney a free admission of air, until the evil ceases.

When a chimney is filled with smoke, not of its own formation, but from the funnel next to it, an easy remedy offers in covering each funnel with a conical top, or earthen crock, not cylindrical but a frustrum of a cone; by means of which the two openings are separated a few inches, and the cold air, or the gusts of wind no longer force the smoke down with them.

If these remedies fail, it will be generally found that the chimney only smokes when the wind is in

a particular quarter, connected with the position of some higher building, or a hill, or grove of trees. In such cases the common turncap, as made by tinmen and ironmongers, will generally be found fully adequate to the end proposed. A case has occurred of curing a smoky chimney exposed to the NW. wind, and commanded by a lofty building on the SE. by the following contrivance.

A painted tin cap of a conical form was suspended by a ring and swivel, so as to swing over the mouth of the chimney-pot by means of an arched strap or bar of iron nailed on each side of the chimney. When a gust of wind laid this cap (which, from its resemblance in form and use to an umbrella, is called a paravent or wind-guard,) close to the pot on one side, it opened a wider passage for the escape of the smoke on the opposite side, whichever way the wind came; while rain, hail, &c. were effectually prevented from descending the flue.

A patent has recently been granted for an apparatus to be fitted to chamber-doors, and applicable, indeed, to every kind of door, for the purpose of stopping out cold currents of air from parlours, drawing-rooms, dining-rooms, halls, passages, bedrooms, &c. &c. and likewise for stopping out sound, smoke, steam, dust, foul air, and floating vapours from without; so contrived as to admit, when required, any quantity of air in an instant by a simple movement with the thumb and finger. Rooms having this invention, will be more equally heated throughout with a saving of nearly half the fuel. On the lower part of the door is fixed the patent slider, made of thin wood or iron japanned. When the door is shut against the jamb, it presses against

the end of an iron rod, and causes the slider to move down to the floor or carpet, and when the door is opening, this rod is forced back again by means of springs, which cause the slider to run upwards, and ride over the carpet.

It is urged by the inventor that, with this invention applied to door-ways, nearly half the fuel may be saved, the room much more equally warmed throughout, and the most tender persons may safely sit near the door without fear of catching cold or rheumatism; and there will be no further occasion for screens or baize doors. It will stop out sound, smoke, and dust, foul air and floating vapours from without, and the whole, when fixed, will be found to be extremely simple, and elegantly neat.

We understand that a very ingenious method has been discovered in Holland of preserving the air pure in large halls, theatres, hospitals, &c. The apparatus is a common lamp, made according to Argand's construction, suspended from the roof of the hall, and kept burning under a funnel, the tube of which rises above the roof without, and is furnished with a ventilator. Dr. Van Marum, the inventor, for his first experiment, filled his large laboratory with the smoke of shavings; a few minutes after he lighted his lamp, the whole of the smoke had disappeared, and the air was perfectly purified.

Although ventilation depends in a great degree upon the internal temperature of our mansions, and is, therefore, strictly connected with the subject of

ARTIFICIAL HEAT,

yet, hitherto, sufficient care and attention have not

been paid to that fact. When we are surrounded with air which is not in motion, its little tendency to conduct heat keeps us warm, by our natural heat being accumulated: but when exposed to air in motion, that becomes the means of carrying off our heat, as we experience by the refreshing breezes in summer. The pleasurable feeling we are conscious of, in a temperature of about 60 degrees, with a moderate breeze of fresh air, is during that uniform abstraction of native heat which leaves no sensation of heat or cold. But this temperature will vary with different people; and, in all, in proportion to the quantity and nature of their clothing. To preserve this equality of temperature is the object of the new domestic economic philosophy so happily broached, and so successfully pursued by our chemical philosophers, our philosophical architects, and ingenious mechanics.

Of the various useful inventions for this purpose, we shall content ourselves with one which we have not yet seen exhibited, although a patent was obtained for it some years ago,

This economical invention consists of a fire-pan, or fire-lamp, and a fire-grate, or fire-stove, in which small or inferior coals may be consumed for all the same purposes as large or round coals.

The fire-pan or lamp may be made of any convenient shape, with a bottom formed into one or more vertical tubes, or such tubes should be fixed in the bottom and provided with valves or dampers to regulate the admission of air. A funnel, or funnels, should be placed on the side of the fire-lamp from which the wind may happen to blow, to be used as occasions may require.

The fire-grate is made with a pervious back, be-

tween which and the wall, at the back of the fire-place, a space must be left for the admission of air, for the regulation of which this aperture is provided with a damper.

By this invention, much of the waste is prevented which arises from the indiscriminate and injudicious use of the bellows, elsewhere noticed at some length; to which observations we will here add a useful hint, that a saving will be found if, instead of applying the bellows to a doubtful fire, in some instance, a very small quantity of nitre should be dropped in. The effect is generally instantaneous, and without any unpleasant odour.

Let it be observed also in the economy of artificial heat, that every part of a fire-place which receives the radiant warmth ought to be white, in order to reflect, instead of absorbing it. The rationale of this will be further noticed; and is, in fact, well known to every tyro in optical philosophy.

We observe from a recent volume of the Phil. Trans. that where a stove or charcoal-pan, for temporary purposes, would be inconvenient, and where but a small elevation of the temperature of the air is required, a change of a few degrees may be produced by means of a large argand burner, supplied with olefient gas, or a gas formed of equal parts of carbon and of hydrogen. In executing this experiment, a tube may be formed with an end or opening like a speaking trumpet, into which the rays of light are to be concentrated by means of the photometer of Mr. Leslie's invention. If the light is thus concentrated by a plain convex lens, and the blackened ball of the instrument in the focus, the elevation of the temperature will be found very sensible to the hand. When this

experiment was tried by the ingenious chemical professor at the Royal Institution, the mercury in a thermometer rose 4 or 5 degrees in five minutes.

From Heat we naturally proceed to

ILLUMINATION,

respecting which it must be acknowledged that there is no part of domestic economy for which, of late years, philosophy and mechanics have done more than for the production of artificial light.

We believe it may now be considered as an established fact, that gas-light, even for domestic purposes, is the cheapest and best, with the exception of the first cost for an apparatus, which can only be covered by savings on extensive illuminations; but it is hardly within the compass of domestic expenditure, where required only by one family. Even in the metropolis, and in large provincial towns, where gas pipes can be led into every apartment, there still exists another difficulty in the way of its becoming an entire substitute for oil or candles; which is, that it has not yet, with any success, been adapted to portable lamps, though such improvement may yet take place, as a candlestick, or lamp in the shape of one, may be formed with a reservoir sufficiently large for casual purposes, without being of a very inconvenient size; though, even then, a ready supply would be difficult, unless we produce our own gas, or can send off to the gas shop for a cubic foot of gas, as readily as for a pound of candles, or a farthing rush-light.

That the burning of gas, however, generally speaking, is an important saving, is clear from re-

peated experiments, by which it appears that one gas lamp gives as much light in the street as four lighted with oil. In shops, it has been found that three gas lights, at 25*s*. each, per year, will illuminate the windows and the whole apartment in a much superior style to what could be done by five or six mould candles. The estimated difference of cost per annum, is 3*l*. 15*s*. for gas, fully equal to 12*l*. for candles. This saving may also be much increased by improvements in the lamps, particularly those on the argand construction. It has been proved by experiment that an argand gas burner, seven-eighths of an inch in diameter, perforated with 18 holes one thirty-second of an inch in diameter, consumes, when the flame of the gas is three inches high, four cubic feet of gas in an hour, and produces a light equal in intensity to six tallow candles, eight in the pound. It ought also to be observed (and this part of gas management is of more importance than is generally supposed), that when the flame obtained by this kind of burner, rises to a greater height than from two to three inches, the combustion of the gas is imperfect; and the same holds good with regard to the size of the holes from which the gas issues. A simple and sufficiently accurate test for ascertaining whether any portion of the gas escapes unburned, may readily be procured. For this purpose, it is merely necessary to hold a piece of clean writing-paper a short distance from the apex of the flame, and if the combustion is not perfect, the paper will be discoloured, and immediately imbibe a very fœtid odour. But even the power of the argand lamp may be increased by parabolic reflectors: which also, where oil is burned, produce a double saving; it being now ascertained as a curious fact

in the theory of artificial light, that, when reflected by a parabolic mirror, this reflected light is greater in proportion to the diminution of the wick. This has been ascertained by the experiments of the French academy, when it appeared that an argand lamp of six lines diameter, gave a better light than one of sixteen, consuming at the same time only half the quantity of oil. This improvement may be applied with great success to carriage lamps, particularly in travelling; and is not unworthy the notice of those metropolitan districts where gas illumination has not yet taken place.

They have already begun to apply this principle to public use in France, and M. Bordier Marcet, the relation and successor of M. Ami Argand Marcet, the inventor of the lamps called after him, has made considerable improvements in regard to the lighting of public streets. The mayor of Valogne has certified that his lamps, with parabolic reflectors, give so good a light that a person may see to read with ease at the distance of one hundred and twenty yards; that they are very little affected either by rain or wind, and that the quantity of oil consumed by them is only one ounce and one-fifteenth per hour. Thus the whole town is now better lighted by eighteen of M. Bordier's lamps, than it was formerly by forty on the old plan.

This is certainly highly deserving notice, both in domestic economy and in parochial vestries. considering the very indifferent light in our streets, where the gas has not yet been introduced.

Mr. Brande considers ten-hole argand burners, each consuming about a cubical foot and a half per hour, and giving the light of seven wax candles, or nearly two oil argands, as the most econo-

mical and generally useful for the ordinary purposes of illumination by oil gas. In fact, the single jet burners have been proved to consume a very much larger proportion of gas for the production of an equal quantity of light. It was shewn by Count Rumford, some years ago, that the quantity of light emitted by a given portion of inflammable matter in combustion, is proportional, in some high ratio, to the elevation of temperature; and that a lamp having many wicks, very near to each other, so as to communicate heat, burns with infinitely more brilliancy than the argand lamps of the common construction. Mr. Brande, in a recent Bakerian lecture, confirms this fact, and gives a drawing* of a gas argand burner, particularly calculated to produce an effect of this kind, which he considers to be of the most economical construction, and well fitted to produce the greatest possible increase of light, in proportion to the quantity of gas consumed. He considers the bevelling of the perforated edge to contribute greatly to the perfection of the light. The diameter of the circle of the holes in this burner is not quite three quarters of an inch; and the holes ought not to be more than one-sixteenth part of an inch in diameter. Such a burner will consume, at the highest average, about 4,000 cubical inches of gas in an hour; and it will afford a light equal to eight or nine wax candles, of four to the pound.

The apertures for coal gas require to be larger than for olefient or oil gas; but it is not the cheapest for use, since five of oil gas are equal to

* Phil. Trans. 1822.

thirteen parts of coal gas for the production of the same quantity of light.

Another great saving may result from the philosophical inventions of the ingenious Mr. Lester, who, we understand, has recently brought his new discovery in optics to perfection; and, from its simplicity and utility, it promises to be of great importance. Two cones of light produced from the luminary, being placed near to their respective apexes, and in opposite directions, base to base, form a parallelogram of indefinite dimensions, that would fill the room with an equal light of the same tensity in every part of its space; and as the fountain of light would be in opposite directions, the bodies equally divided, would have but two sides as opposed to the lines of vision; no shadows can be produced by the application. Rooms of all descriptions may be lighted by the flame being placed on the outside of the wall, and its reflection thrown through an aperture, by which means the smoke arising from the cumbustion will pass off into the asmosphere without entering the room, and the light will have the most beautiful effect, by illuminating a space void of smoke, which is far from being the case with rooms lighted in the common way. It has been clearly ascertained that one of Mr. Lester's Mirrors, $13\frac{1}{2}$ inches diameter, placed before one of the lamps commonly used to light stages, and fixed to the foot-board of the driver, will render the smallest print legible at the distance of one hundred yards before the leaders' heads.

We should not wish to see coal-gas become entirely a substitute for oil; as our Greenland trade is of too much importance to the country, espe-

cially as a nursery for seamen, to be sported with rashly; but since oil may be applied to the production of gas, though by a different process from coal, the trade is not in much danger. Indeed, it may even be expedient to find a substitute for whale-oil, and we see with pleasure that an Irish chemist, desirous of introducing the patent lamp into general use in that part of the United Kingdom, has found means to improve rape oil by a simple process, which renders it equal to spermaceti for the purposes of illumination. He began by washing the oil with spring water, shaking the former violently with a sixth part of the latter. By this operation the two substances are intimately commixed: if left at rest they separate completely again in less than forty-eight hours, the oil swimming at top, and the water with all the feculent and extraneous particles subsiding to the bottom. Upon this method he improved much by substituting sea water for fresh: the latter impregnated with salt is less fit for the purpose than sea-water, as the light is not so bright, and is of a reddish cast. Rape oil thus treated does not give out any bad smell, and is not to be distinguished from spermaceti. By this process of washing, the oil loses less than $\frac{1}{1000}$.—Mr. Roche intends to perform it in a churn, with a cock towards the bottom, the water to come up very near to the cock, by which all the oil can be drawn off after it has deposited its impurities.

Whenever oil is used for the purpose of artificial light, it should be kept free from all exposure to atmospheric air; as it is apt to absorb considerable quantities of oxygen, which renders it more tenacious and less adapted to use, by capillary attraction through the common lamp wicks.

It is urged in favour of oil gas, that it may be formed with a small apparatus, that it is free from offensive smells, and that it neither corrodes the pipes, nor discolours metals, coloured silks, &c.

It is asserted also, that 1000 feet of oil gas will afford a quantity of light equal to more than three times that proportion of coal gas, or 3333 feet of the latter.

If oil is very coarse and tenacious, a very small portion of oil of turpentine may be added.

There are some recent economical discoveries in regard to gas, which are highly deserving of notice. It has been found by experiment at Manchester, that oil of bitumen or coal tar, which is considered as waste by those who make and burn gas, if mixed with dry saw-dust, exhausted log-wood, or fustic, to the consistence of paste, and allowed to remain until the water has drained off—two cwt. of the mass being put into the retort, instead of coal, will produce more gas and be less offensive than the same quantity of canal-coal; and the process may be repeated until the whole of the tar is consumed.

If oil is preferred to pit coal a great saving is now opened to our view; for, by a new discovery, combustible gas is procured by causing oil to fall drop by drop into a tube heated red hot, and which is kept in that state. The gas passes immediately from the tube to the lamp, and produces a beautiful flame, without any smell.

Nor are these the only cheap materials: for we understand that an American chemist has invented a lamp in which tar is burnt instead of oil. It consists of a fountain reservoir to supply and preserve a constant level, and a lamp which receives the fountain-pipe at one end, and at the other a

burner for the tar: this is merely a small cup placed on the axis of the lamp, and supplied with tar from the fountain. A draught tube is fixed in the lanthorn, or external part of the lamp, and air is admitted by a hole at the bottom. The current of air, in passing through the lamp, envelopes the burner and urges the flame, and the draught-tube conveys off the smoke. Nor must it be forgotten, that Sir H. Davy has, to guard against accidental fire, recently found means to procure permanent light without flame: he has taught us that a platina wire of sufficient fineness, and an inch or an inch and a half long, which has been heated red hot, may be long preserved in this state over a vessel in which there is sulphuric ether or alcohol, in a state of evaporation. Thus this incandescent wire may be employed as a cheap night-lamp, or instead of a steel to light tinder.

Since this discovery the principle has been applied to practical uses by another very ingenious individual, who has ascertained that if a cylindrical coil of thin platina wire be placed, part of it round the cotton wick of a spirit lamp, and part of it above the wick, and the lamp be lighted so as to heat the wire to redness; on the flame being blown out, the vapour of the alcohol will keep the upper part of the wire red hot for any length of time, according to the supply of alcohol, and with little expenditure of it, so as to be in constant readiness to kindle German fungus, or paper prepared with nitre, and thus to light a sulphur match or any other, at pleasure. The proper size of the platina wire is the 1-100th part of an inch; a larger size will yield only a dull red light, and a smaller is difficult to use. About twelve turns of the wire will be sufficient, coiled round any cy-

lindrical body suited to the size of the lamp; and four or five coils should be placed on the wick, and the remainder of the wire above it: the latter will be the part ignited. When the wire has become oxyded, it will be necessary to uncoil and rub it bright with fine glass-paper, which will cause it to act again with increased effect. This lamp, while it affords a sufficient light to shew the hour of the night by a watch, and to perform many other useful services, does not disturb persons unaccustomed to keep a light burning in their bed-rooms.

But discovery on discovery is rushing into light, for Professor Meinacke, of Halle, has succeeded in producing a brilliant illumination by means of electric light, and with the aid of an artificial air enclosed in glass tubes. As the electric sparks propagate themselves to infinity, the Professor thinks it will be possible to light up a whole city with a single electrifying-machine, and at a very trifling expense, by the adoption and probable improvement of the apparatus he has already invented.

Nor are Heaven and earth alone ransacked to enlighten the world—water has also been pressed into the service, as we find that an apparatus called the American Water-Burner, has lately been invented by Mr. Morcy, of New-Hampshire. It is a rough blow-pipe; but is applicable in many cases in place of a furnace. Tar is intimately mixed with steam, and made to issue from a small jet, in the manner of an eolipile; and the stream of matter, being ignited, produces a flame of great size and intensity. It appears that the water is partly decomposed towards the middle of the jet, and that the heat is thus increased, by increasing the quantity of active agents. But whatever the exact

effect, the water is found to be useful in preventing the formation of smoke, and increasing the combustion.

This is a hint which may become highly useful upon the plan of constructing furnaces so as to become the consumers of their own smoke.

We understand it has recently been proved, by a series of successful experiments, that dark peat moss produces gas not inferior in quantity and quality to that extracted from coal, possessing the additional and valuable advantage of being in a great measure free from those offensive and noxious effluvia emitted by gas produced from the latter material. The tar obtained by the process may be applied to several useful purposes, while the coke is adapted for the furnaces of brewers, distillers, and smelters of ores, &c.

Even the tricks of chemistry may be applied with success in many cases to Domestic Economy, and in none more advantageously, upon a small scale, than in safe means for instantaneous ignition. One of the readiest, but most dangerous, of these was founded on the experience that hyper-oxymuriate of soda, brought into contact with a combustible body (wood for instance), which has been plunged into sulphuric acid, sets fire to this combustible. Latterly this apparatus has been rendered more convenient and less dangerous, by putting into the phial, instead of liquid sulphureous acid, very fine sand, asbestos, gypsum, or some other body, which the acid does not destroy, and which is moistened with it. Several thousand matches may be lighted in this manner before it is necessary to renew this kind of indissoluble sponge, which is to produce the inflammation.

A method nearly similar, but rather more simple,

has recently been proposed; and matches for the purpose are prepared by mingling two parts of the oxymuriate of potash and one of sulphur, which, by means of a little gum, is attached to a common sulphur match. This match on being dipped into, or rather slightly wetted with, oil of vitriol, immediately catches fire. The sulphur and salt should be pulverized separately: if rubbed together in a mortar, they form a dangerous explosive mixture.

Having thus far endeavoured to illumine the world, we shall proceed to another subject.

SECTION II.

PRINCIPAL APARTMENTS.

BED ROOMS—*Ventilation—Air-bath—Bedding—Air-beds.* DRESSING ROOMS—*Home Manufactures—Odours—Ornaments—Flowers—Teeth—Hair—Razors—Cosmetics — Dress — Dyeing—Choice of Colours—Diamonds, &c.—Trinkets—Pearls.* BREAKFAST AND TEA-TABLES—*Utensils—Tea, Coffee, &c.* HUNTING PARLOUR—*Fowling Pieces—Powder—Veterinary Art—*LIBRARY—*Comfort — Convenience—Arrangements — Light—Collecting—Selection—Care of Books and Prints—Fine Arts—Sculpture—Paintings—Cabinets of Natural History—Medals—Gems — Antiques — Chemical Experiments, &c. &c.* DINNER-TABLE—DRAWING-ROOM.

BED ROOMS.

WHETHER in the palace or the cottage, whether reclining on the state-bed or stretched on the humble pallet, the reader will find more real economy, as well as pleasure and comfort, in attending to his dormitory than to his larder. Sleep is the food of half our life, the regenerator and regulator of all our faculties both bodily and mental—in short, as Sancho says, "it covers a man all over like a cloak:" but to render it salubrious, indeed to prevent its being morbific, it is absolutely necessary

that the time when, the manner how, and the *place where*, should be sedulously regulated.

We have seen it stated with some ingenuity, that, as age increases, sleep decreases. When a child enters upon life, it can sleep twenty-two out of twenty-four hours. Its sleep will diminish about three hours upon the average every year during the next three, when activity will enable it to nurse itself! That reduction will afterwards be nearly one hour every ten years, till man arrives at eighty, when four or five will be his hours of sleep.

Air and exercise during the day are most essential to man; and though at night he is quiescent, yet his air must still be attended to, as the privation of salubrious air always produces disease. For this purpose, whenever the air is dry it ought to be freely admitted during the day; nor ought it, unless damp or locally insalubrious, to be excluded totally during the night. It is true, that where a current of air falls upon the bed, it ought to be prevented from direct influence by means of the usual curtains. But these curtains, even in the best-aired apartments, should never be closely drawn, not even round the couch of the invalid, any more than round that of the most robust son of health and strength. A very simple experiment, though one which humanity will not wish to be often repeated, may be tried by hanging up a small bird in a cage at the head of a bed of which the curtains are kept closed during the night: where the experiment has been tried, the result was that the unfortunate bird appeared to be expiring when the morning dawned upon the face of nature; and was only recovered, and that with difficulty, by immediate exposure to the atmosphere.

Upon this principle, too, we ought to be particularly careful of all fires in bed-rooms; from the quantity of carbonic acid gas which developes itself from fires, whether of coal or wood, and may be dangerous if persons retire to sleep, without attending to the freedom of ventilation.

Let it be remembered, also, that very high beds are injurious; and that they ought never to be above the level of the chimney aperture, lest the carrying off of the nocturnal exhalations should thereby be prevented.

We must particularly caution our readers, not only against the use of charcoal fires upon any account whatsoever, but also against the use of charcoal in warming-pans, or even of common coals, until they have been burnt to a cinder. To the healthy, the vapours thence arising and left in the bed, where they remain on account of their density, are often troublesome; but to the sick, they are palpably injurious, and frequently prompt to that cough which annoys the phthisicky and asthmatic, the moment they lie down for repose. Where circumstances require a bed to be heated at a moment's notice, a little salt thrown into the warming-pan, and suffered to burn for a minute previous to use, will generally be beneficial; and as chambermaids are seldom either philosophers or chemists, it may be better to make this a standing order than to trust to their judgment on gaseous combustion. Those who wish to ascertain whether their bed be properly aired, will do well to introduce a glass goblet between the sheets for a minute or two, just when the warming-pan is taken out: if the bed be dry there will only be a slight cloudy appearance on the glass, but if not, the damp of the bed will assume the more formidable

appearance of drops, which will act as a sufficient warning to drop the idea of sleeping in a situation so fraught with danger.

These precautions with regard to air, will also have some reference to the light which may be admitted into our bed-rooms. In general, it is customary to select the most quiet and retired apartments for the sake of repose; and, in large towns in particular, those which are the worst lighted. Too often it happens that the local darkness is increased by close window shutters, and by thick bed-curtains; but this is injudicious, inasmuch as it produces too great a transition from darkness to light, in a manner that is extremely prejudicial to the eyes. It is in the power of every person so to regulate the admission of light, as to guard against general inconvenience, simply on the plan of permitting a small portion to enter the apartment from the first dawn of morning, though not to fall upon the face of the sleeper; and then to regulate it gradually, after rising, so as to accustom the eye to the full blaze of day. In many cases of weak eyes this will be found more efficacious than the whole tribe of advertised eye-waters.

As the utmost attention to cleanliness will not always prevent the intrusion of certain little insects, too indelicate to name, but which take longer leaps in proportion to their size than any other known animal in existence, it has been customary to scatter fresh leaves of penny-royal in bed-chambers as an antidote against their appearance; but fresh vegetables in a dormitory have been found prejudicial to health, and growing ones much more so. Hence flowers and shrubs, whether in bow-pots or vases, though highly ornamental and not injurious in a dressing-room, ought to be excluded

from the bed-chamber. White lilies, in particular, are so deleterious, that a case is on record of apoplexy produced by exposure to the scent of three or four pots of them in a chamber.

Wormwood, also, is too potent; but a decoction of it may be safely and usefully sprinkled on the floor: but perhaps the safest experiment is that of a bag of dry moss, which is said to force them either to emigration or to certain death.

Even the honey-suckle and jessamine, so beautiful when embowering a cottage window, ought to be excluded, by a shut casement, at the hour of repose; nay, the branches of flowering hawthorn, so frequently introduced into fire-places in the spring, may prove injurious to weak lungs at night, however grateful during the day.

The dead hour of night, however, is seldom a convenient time to get rid of such nuisances; but they may be corrected in part by the temporary opening of a window, and that too without any danger of catching cold, if proper precautions are taken. In fact, a current of air in the night, for a short time upon the body, is by no means insalubrious if accompanied with due care.

Dr. Franklin, in one of his letters, declares that he preferred the *air-bath* to the use of cold water, finding it much more analogous to his constitution, as well as more agreeable. He adds that he has even got up in the night, and remained undressed for half an hour or longer, according to the season, either walking up and down his apartment, or occupying himself with a book: after which, on returning to his bed, he was certain of enjoying sound repose.

Where the invalid thinks this too violent an exposure, a partial bath, free from any absolute cur-

rent of air, will not be hurtful. This species of exercise, for such it really is, may be easily accomplished by means of simple machinery, which will save the trouble and anxiety of depending upon assistance, and in many cases the expence of a nocturnal attendant. Several inventions have been offered for this purpose; but perhaps the best may be found in a recent patent machine, or wind-up bedstead for sick or lame persons, by which their position can be easily altered without occasioning pain or fatigue. It works smoothly without any jerks, and by one rack only, which enables a single attendant to raise, or depress the bed at pleasure. The patentee* can furnish bedsteads on this construction at the rate of 36*s*. each, and an old bed may be easily altered to this plan. He can also, if necessary, lower the foot part of the bed by the same movement, so as to make the bed answer the purposes of a chair.

In all these cases, however, the moment the use of this species of bath is over, the person applying it ought to return to his accustomed temperature by lying down under the bed-clothes: and here it may not be improper to remark that these should in all cases be apportioned to the season or to the prevailing temperature, regulated by the bodily health of the individual, so as just to preserve the insensible perspiration and no more.

It will be found a great saving eventually of time and trouble, and accomplished at a small expence, to have all beds and mattresses opened out at intervals not very distant, so as to have the feathers or other internal materials beaten, cleaned, and dried, and the cases washed. The bedsteads ought also

* Mr. Woodall.

to be taken down three or four times a year, the screws rubbed with pure oil, and a good manual cleaning given to all parts. This plan, which has been slightly noticed under the general head of cleanliness, will render all poisonous mixtures unnecessary; besides saving all the trouble, filth, and expence consequent upon the use of those medicaments so much recommended by quacks, bug-destroyers, &c.

One word in regard to materials may here be introduced. The very high price of feathers of late years has completely done away the practice of having one well-filled feather-bed laid upon the bottom sacking; and the substitutes of straw mattresses, with bed-cases half filled with indifferent feathers, are poor indeed. Instead of these it will be found not only cheaper, but more comfortable and healthful to use hair mattresses, with straw palliasses if you please, but with sedulous attention to have the latter renewed at intervals not longer than a year each.

Of late years considerable quantities of *Zostera*, or sea-grass, have been imported from the continent, and used successfully in stuffing mattresses, and for the other purposes to which horse hair is in general applied. The same, or a very similar plant, is found on different parts of the shores of Scotland, more especially in the West Highlands, where it is commonly denominated sea-grass, mill-grass, or milk-grass.

In this age of adulteration, duck's feathers are frequently substituted for those of the goose; but these are highly pernicious, being often covered with small insects, which destroy the substance of the feathers, and produce the most disagreeable results. Where the absolute expence is not a first

object of consideration, (and even there the difference is but trifling,) it may not be injudicious to adopt beds upon the new patent principle of an ingenious mechanist in Somersetshire, which consists in rendering the case of the bed, pillow, &c. impervious to air, and filling it by means of an air-pump with common atmospheric air, instead of down or feathers. The air is introduced through an aperture, or tube, into the case, and prevented from returning by means of an air-tight stop-cock or valve. The case may be rendered impervious to air by various methods; but that recommended by the patentee is a composition of India rubber, spirits of turpentine, and linseed oil, which when dry is extremely pliable, and so elastic, that, if the cloth be folded in sharp corners, the varnish will not crack or peel off.

The advantages of this method of construction for beds and pillows are, their superior degree of elasticity, affording the most refreshing and easy repose either in this or even in the warmest climates; that they may, when required, be changed from the greatest degree of softness to the hardness of a mattress, by moving the handle of the air-pump which is placed commodiously within reach; or may be rendered soft to any required degree, by the exhausting pump, also within reach. They may at any time be rendered perfectly fresh and cool by changing the air, by the alternate use of the air-pumps. This may be effected in a few minutes, without the person sleeping on the beds being moved: hence their great advantage to invalids, and their generally refreshing and salubrious effects.

Such machinery may at first sight appear too philosophical for common use, and too cumbrous

for a sleeping-apartment; but as to the first point, only a very small portion of ingenuity is required to become conversant with its application; and as to the second, it is merely necessary to say, that the air-pumps, together with all the machinery for filling and exhausting the beds, being enclosed under the bedsteads, and communicating with cords and tassels (resembling bell-pulls) suspended immediately above the pillows, any alteration in the state or temperature of the beds is thus easily effected at any time required.

They save much manual labour, as they require no making up; for by their elasticity they rise immediately when left, and are then in the state of other beds after being shaken and made up, the counterpane, &c. being returned as usual: hence they occasion no dust or film in the rooms, or on the furniture, which is always the case where feather or down beds are used.

For medical purposes, also, they may be filled with air at any required temperature; or with water, steam, or other fluids, wet or dry, elastic or non-elastic; to which the case is equally impermeable. In addition to this they have several other advantages. They are not subject to be sloping on one side, nor to those hard clumps or knots which feathers or down gradually acquire in the course of a few years. They are likewise extremely light, the largest weighing only a few ounces, and portable also, being easily folded or rolled, after being previously exhausted.

Under such advantages, a night's good repose can scarcely be doubted—but day breaks and we therefore proceed to the

DRESSING ROOM,

which may be considered with reference to both sexes.

To the ladies, however, we now more particularly address ourselves; and we cannot couch our address in more forcible terms than in the words of a fair writer, a real Englishwoman, who has recently offered a sensible and well-written appeal to her countrywomen in general, exhorting them, in these times of general distress, to discourage, by their conduct and influence, the importation, both legal and illegal, of foreign manufactures.—"I allow," observes the writer, "there are some temptations to be resisted—the gaily coloured silks and handkerchiefs of French manufacture, the gloves which set off the forms of our hands and arms, are certainly far superior to our own; but if there were no temptation, there would be no merit in the forbearance. And if we look down on our dresses, unadorned by handsome laces, because from principle we abstain from purchasing them, and use our arms clothed in less elegant or becoming attire than we have been accustomed to, let us reflect with pleasure that we have, by these little sacrifices, contributed, as far as we can, to the employment of our industrious countrymen. What, therefore, can be more desirable, than that Englishwomen of all ranks should combine in determining to purchase only the manufactures of their own country, and resist the temptation of adorning their persons, at the expence not only of the comforts, but the morals, of their countrymen?"

After this spirited and patriotic address, we shall at once proceed to the most economic mode of ornamenting the apartment itself; and then offer

some remarks on the ornamenting the persons of our fair readers, which may lead, not only to the preservation, but also to the acquisition of beauty.

The first point of consideration must be that which first strikes the sense on entering this apartment of sweets, and which the most gallant admirer must acknowledge is dependent upon the smell, even before the sight. Cleanliness and ventilation are indeed preferable to all factitious odours; but as these are generally adopted, not, however, we hope, to the neglect of the former, it may be consistent with our plan to offer a cheap substitute for the Attar of Roses, so difficult to procure in a genuine state. The recipe is very simple, being nothing more than to dip the finest cotton wool in clear olive oil, which must be spread in thin layers, in a tall glass vessel, with alternate layers of jessamine flowers, which in a few days will impart the whole of their perfume to the cotton. The oil may then be pressed out for use; and the cotton itself may be laid in drawers or band-boxes, where its perfume is wished for.

Beyond this we advocate not artificial odours, unless, indeed, that musk should be introduced for the purpose of removing destructive insects. This drug is expensive, and therefore seldom to be had genuine; which, however, is not an object of great importance, as a very small quantity will suffice for a life-time. If, on purchase, our fair readers should wish to ascertain its genuineness, that may be easily done by steeping a silken thread in garlic juice, or drawing it two or three times through a clove of moist garlic, and then through the musk, which, if genuine, will instantly so overcome the odour of the garlic, as to render it imperceptible to the most acute olfactory feeling.

It is not unfrequent to ornament dressing-rooms with artificial flowers; yet these, however beautiful, have no odour: but a cheap and elegant substitute may be found by taking natural flowers in bloom, and dipping them in alcohol, or strong spirits of wine, for about a quarter of an hour; after which the colour will appear to have entirely faded. As they become dry, however, they may be arranged for the beaupots, when it will be found that their colours will revive, and their odour will be prolonged much beyond the usual time.

Most flowers begin to droop and fade after being kept during twenty-four hours in water; a few may be revived by substituting fresh water; but all (the most fugacious, such as the poppy, and perhaps one or two others excepted) may be completely restored by the use of *hot* water. For this purpose, place the flowers in scalding water, deep enough to cover about one-third of the length of the stem: by the time the water has become cold, the flowers will have become erect and fresh; then cut off the end of the stems, and put them into cold water. It may be added, that a few grains of salt dropped into the water in which flowers are kept, preserves them greatly from fading, keeping them in bloom double the period that pure water will.

We have seen another ingenious method of preserving flowers throughout the winter, which may serve as a cheap and pleasing mode of decoration. The plan is to pluck the flowers when half blown, and to put them in an earthen vessel with a close cover, immersing them, with the stalks downwards, in a mixture of water and verjuice, of each equal parts, sprinkled with a small portion of bay salt. The vessel must be well closed up and kept in a warm place, safe from the action of frost; and then, on

the coldest day in winter, nothing more is necessary than to take them out, wash them in fair water, and hold them before a gentle fire, when they will open as if in all their vernal bloom.

As the flowering of bulbous roots is always an agreeable decoration of the dressing-room in winter, it may be amusing to state an easy method of encouraging it rapidly, even in the coldest weather. Take three ounces of nitre, one ounce of common salt, half an ounce of potash, half an ounce of sugar, and dissolve them in a pint of rain-water. Keep your glasses near the fire. Change the water every ten or twelve days; and each time put in about half a tea-spoonful of this mixture.

It must not be forgotten that the perfumes of ornamental flowers, when growing, will be increased, as well as their beauty, by affording as much sun and air as possible, and also by being careful always to set them out under genial showers. It is literally sending them to a watering-place.

An elegant mode of combining the odours of different flowers is by preserving the leaves in vases, or China jars, in the form of a *pôt pourri*, as the French term it; for which fine perfume, the following is a genuine recipe. Take one pound of orange-flowers and common rose-leaves, half a pound each of the leaves of red pinks, marjorum and myrtle; the leaves of musk roses, thyme, lavender, rosemary, sage, camomile, melilot, hyssop, sweet basil, and balm, two ounces of each; two or three handfuls of jessamine flowers, a large handful of lemon rinds, cut as thin as possible; the same quantity of those of small green oranges, and fifteen or twenty laurel leaves. Put them all into a well leaded earthen jar, with half a pound of bay salt, and stir the whole carefully with a

wooden spatula, or spoon, twice a day for a month; then add Florentine white iris and benzoin, of each twelve ounces; powdered cloves and cinnamon, two ounces of each; mace, storax, calamus aromaticus, and cypress, of each one ounce; lemon-coloured sandal, and long sweet cypress, of each six drams. Stir all together, and if the proportions be carefully attended to, according to the above directions, a most delightful compound of fine odours will be obtained, in which no one scent will predominate, whilst the fragrance of the whole will remain unimpaired for a great number of years.

It is needless to expatiate upon the utility of these odours in correcting all acquired unwholesomeness of the air in our dwellings, or rather in correcting the effects of that unwholesomeness. To understand the principles of action in this case, may be of some import. Wholesome air is that which affords the due stimulus to the lungs, and to the blood; unwholesome air, generally speaking, is that which, although not possessing qualities absolutely noxious, is yet destitute of the proper quantity of oxygen required by the system, in the proportion of about seventeen parts in an hundred of atmospheric air. As for those species of noxious airs which are positively deleterious, they come under a medical head, and need no reference here. But, as to that air which is hurtful to the constitution from want of due stimulus, we may usefully correct its deficiency by the stimulus of artificial odours. It will happen sometimes, however, that, even in our wardrobes most carefully kept, clothes long laid up will acquire a very unpleasant smell. To counteract this, perfumes may be used; but the readiest method is to neutralize

or destroy it, which may at once be done, by placing pieces of new burnt charcoal amongst the clothes, when the whole of the unpleasant fumes or odour will be absorbed in a day or two.

Charcoal is also a very useful tooth powder; but although extremely efficacious when used alone, it may, perhaps, be more actively employed along with the following ingredients. Take half a dram of tartar of vitriol, same quantity of myrrh, also of dragon's blood: to these add one dram of gum lac, and four grains of ambergris, with two grains of musk, and fine powdered charcoal equal to the whole. Beat them into a fine powder, and keep in a phial close stopped. To use it, take a fine linen cloth, wetted, on the end of your finger; dip it in the powder, and apply it well once a day for a fortnight; after which twice a week will be sufficient to preserve the beauty of the teeth, and to correct any unpleasant savour from the breath even where there is a carious tooth.

To hasten the effect it may be expedient to chew the Florentine onion root; and to use a gargle of the Peruvian bark, or of fennel water, to which a small quantity of alum water and essence of lemons may be added. But these are only necessary where a rapid, though but temporary, effect may be required.

Amongst the various cosmetics recommended for the dressing-room, there are none, perhaps, that seem more harmless than those which profess to give a fine curl to the hair. Now, to assert that the application of any liquid will of itself give a permanent or temporary curl, is absurd in the extreme; but it is very true that the application of a weak soap ley, or a solution of caustic potash, will render the hair more susceptible of adopting the

artificial curl given by putting it in papers. But let it be remembered that this effect is only produced by a complete alteration of the organic structure, superinducing a slow but certain destruction of the hair itself. This may not be immediately observed, either in youth or advanced life: in the former case, indeed, the loss is easily renewed, as if the hair had been merely cut: but in age there is no renewal—if the hair be destroyed, baldness must ensue.

Equally destructive are the various liquid dyes so loudly boasted of by quacks for colouring the hair: some of them, indeed, do produce the effect proposed, especially the black dyes; but these latter are most injurious, as their basis consists always of nitrate of silver, or lunar caustic when in a dry state, the colour from which certainly is indelible as long as the hair lasts; but surely no person who is aware of the effect of the caustic on warts, or on the skin, can for a moment suppose that its operation on the hair can be less destructive.

If we wish then to *save our hair*, we must *save our money* first, by abstaining from the whole list of these puffed recipes that stare us in the face in every newspaper, and in almost every shop window!

Equally destructive are the advertised Depilatories, the general basis of which is yellow orpiment, a certain poison if taken inwardly. It is true that the Turks, with whom bald heads are in fashion, and also the Chinese, do use this as an unguent, to save the trouble of frequent shaving; but those cosmetics, which may be harmless on the head of a robust Janizary, or a Bashaw of three tails, or a fat Mandarin, do not necessarily become fit adjuncts for the toilette of a British belle!

As a point, then, of domestic economy, we re-

commend the disuse of all these quackeries. Those who are very anxious to restore hair, when ill health or the rapid approach of age has removed it, may try the stimulating power of onions, rubbed frequently on the part requiring it. In some instances this application has restored the tone of the skin, and assisted the capillary vessels in sending forth new hair: but it is not infallible. Should it succeed, however, the growth of those new hairs may be assisted by the oil of myrtle-berries, the repute of which, perhaps, is greater than its real efficacy. Or, especially where hair falls off in consequence of illness, it may be useful to try an unguent of burdock-juice, drawn from the root, and to which alcohol and honey must be added—the whole in equal proportions. These applications are cheap and harmless, even where they do no good.

Connected with this part of the subject is a hint which we beg leave to offer for the Gentlemen's dressing-room. We do not expect them, indeed, upon an economic principle, to turn razor-grinders; but if they choose to be their own *tonseurs*, in preference to being taken by the nose by a Frenchman, they will save much time, much patience, and considerable pain, by keeping their *hones* in a proper state. This can only be done by frequently moistening them with oil, and laying them up in a place where they will not readily become dry: but rubbing the hone previous to use with soap, instead of oil, gives a keenness and fineness to the edge that is very agreeable.

If we disapprove of cosmetics for the hair, our objections are much stronger in regard to the complexion. The greatest part of those are formed from metallic oxydes, which are known to be

highly deleterious. Their effects, indeed, may not at first be very apparent; but it will be too late when nervous affections, perhaps palsy, come on, to regret that a silly desire to obtain or retain brilliancy of complexion should have led to their use, to obviate the effects of late hours and of careless, nay unwarrantable, personal exposure.

On this part of the subject we shall offer a hint to the male sex, which the Ladies may, perhaps, find worth attending to. We have already recorded chemical tests on various subjects, and we now propose an infallible one to be tried by any gentle Philander who may be anxious to ascertain whether his fair one's lilies and roses are really her own or not! Let him persuade her to take a trip to Harrowgate, the waters of which fashionable place of resort are strongly impregnated with hydrogen, a gas that acts powerfully upon all the metallic oxydes. When safely arrived at this new lecture-room of nature, he may then try whether the bloom and brilliancy that withstood the test of hot rooms in Grosvenor-square, or Argyll-streeet, will likewise stand the test of those genial springs. If the fair one's face retains its pristine beauty after half a dozen ablutions, he may consider the article as genuine and unadulterated, and free from all the terrors of "Death in the Pot"—but if the dame or damsel begin to look blue, or turn black, he will at once perceive that beauty, like London porter, may be doctored for the market.

At the head of the list of those destroyers of beauty, is the "pearl white," a precipitate of the oxyde of bismuth dissolved in aqua-fortis, and separated from it by the addition of water, for which the aqua-fortis has a stronger affinity than

for the bismuth, and, of course, permits it to fall to the bottom of the glass in a white powder. If our fair readers are, however, dissatisfied with the faces which God has given them, or which they may have made for themselves, let them throw away all their washes and lotions, and, if they must have artificial cosmetics, let them infuse horse-radish in cold milk, as a stimulant to the pores of the skin, or powder the roots of the cuckoo plant, sometimes called "lords and ladies," but botanically known as the *arum;* yet this latter must first be well dried and deprived of its acrid juice. It may be had in the shops under the name of cypress-powder, but is seldom to be got genuine.

After all, perhaps, the best and safest cosmetic, next to plain soap and water, is a little good butter-milk, fresh or stale. It speedily removes freckles, and acts generally as a stimulant of the mildest nature.

In the economy of the dressing-room, the economy of Dress must not be neglected: we shall here confine ourselves, however, to two points strictly applicable to the costume of the present day—velvets and straw hats; other points of considerable importance will come with more propriety under the head of the LAUNDRY. With respect to the first of these articles, it is perhaps not generally known, that velvet pelisses are readily restored, by passing the under-side of the velvet over a warm smoothing-iron. The best way of doing this is for one person to hold the velvet tight, and another to pass the iron over it on the wrong side; after which the garment must be spread out, and a brush, or very fine whisk, like those now sold about the streets by Dutch women,

passed gently yet briskly over the pile. The good effect of this, even upon the most worn-out dresses, will scarcely be credited, until tried: and it is equally applicable to dresses that are but little worn. The customary mode of whitening straw for ornamental use, has been to stove it in a cask with burning brimstone: but there is a readier method, if judiciously applied: Take a solution of muriatic acid, and saturate it with potash until the effervescence subsides. Dip the straw in the solution. Again, the oxygenated muriate of lime, which may be had at any chemist's shop, dissolved in water, will bleach straw without the least diminution of its flexibility.

Recently, in Germany, fashion has introduced a new application of cork, which is now used for making ladies' hats. They differ from straw hats only in this particular, that the material is put together in the manner of fish scales.

When laying up muffs and tippets for the winter, if a tallow candle be placed on or near them, all danger of moths will be obviated.

To renovate feathers, it is necessary first to wash them carefully in soap and water; but as the original pure white can never be restored in its true brilliancy, it may be useful to know the simplest methods of giving a tinge of artificial colour agreeable to the fancy of the wearer.

The first and simplest is a *grey*, which may be produced by sprinkling common ink judiciously upon the feather, reduced by water to any shade; or the feathers may be dipped in ink, reduced at pleasure.

Tincture of turmeric, to any depth of tint, will give a fine *yellow*. The spirituous tincture is best, and the colour may be brightened by means of

lemon juice, either added to the tincture itself, or applied to the feather afterwards.

Liquid blue, added to the tincture of turmeric, affords a *green*, which may be given of any tint, by altering the proportions of the dyeing materials.

Where yellow is thought too gaudy, a fine *buff* may be produced by adding a little pearl-ash to annatto boiled in water.

Liquid *blue*, applied solely, will yield a fine tint of the same colour; or the sulphate of indigo may be adopted for the same purpose.

If *purple* is wished for, add to the liquid blue a little of the red sold in saucers; or dissolve a few grains of carmine in a little spirits of hartshorn, which mix with a solution of orchil.

To produce a *red* colour, nothing more is necessary than to dip the feather in lemon juice until thoroughly wetted, and then into the saucer red, or solution of carthamus.

Whilst on this part of the subject, we may offer a few hints to our fair readers on the philosophical economy of *Colour* in all parts of their dress; nay, even in regard to the hangings and carpets of their apartments, where they receive visitors, and when they may wish to look particularly lovely.

We must first premise, that white reflects all rays of light, and that black absorbs them all; but this, though optically and philosophically true, has certain exceptions, as white dresses, from peculiar circumstances of position, have been observed to reflect only particular tints. All coloured dresses, or coloured objects indeed, between the extremes of white and black, absorb the rays of light in certain proportion and quality; the particular rays *reflected* by each object, being the basis of its colour. Thus brown substances reflect the

red rays in a very small degree; purple reflect the red and blue rays; green the blue and yellow rays; orange the red and yellow, &c.

Again, it must be observed, that reflections from any particular object become confused and intermingled, from partaking of the luminous rays from other surrounding bodies; and it is known, that the rays from white dresses will actually enlighten and whiten shadows upon white substances. In like manner, whenever dresses of different colours are grouped together, the reflected rays from each fall upon the others, and consequently produce a temporary discoloration wherever they fall.

Thus, in a group of ladies, principally in coloured dresses, it will be observed, that the white dresses, whether of silk or muslin, not only receive a confused tinge from the others, but actually alter the tints of the other colours.

This shows clearly, that however judicious a lady may be in the adapting her own colours to her own complexion, yet she must still be very careful with whom she associates, not only in regard to character but colour. Nay, an envious fair one, though she may not wish to stab her rival to the heart with a dagger, may yet give as deep a wound by ascertaining what colour that rival is to wear upon any particular occasion, and then forming a conspiracy amongst her friends to disregard their own charms for one day, and attack her at the important moment under false colours!

Ladies also, who are particularly susceptible upon the score of good looks, must not only select colours for their own carpets and hangings, compatible with their complexion and their mode of dressing, but must also ascertain the colours of their friends' apartments, before they dress for

dinner or a rout, and be prepared for a change of colour, for each change of scene.

At public places also, this is not unimportant. A lady may look irresistible in white or blue at Covent Garden or the Opera, and appear an old woman in the same costume at Drury Lane.

Again, some ladies look best in a glare of light; others will study their own interest by keeping in the shade. The different effect produced by a seat in the centre box of the Opera House, and a stage box in the glare of the lights, is, we believe, well known to many of our fair readers. However, where choice between these two is impossible, much may still be done by a judicious attention to the colour of the costume.

The *Opera House*, of course, leads us to the consideration of diamonds and jewellery. With a few economical observations on that important part of female ornament, we shall close this subject.

If precious stones, of whatever species, be rubbed upon lead, they will change colour if counterfeit, but preserve their lustre if genuine.

Jewellers' gold is well known to be, legally, of inferior value to the mint standard; and necessarily so, because pure gold is too soft to retain the precious stones within its grasp. The difference is, that the jewellers' gold has six parts copper alloy in twenty-four, whilst the mint gold has but two.

Observe that the real jewellers' gold is always stamped; but the gold commonly used in trinkets, toys, seals, rings, &c. contains much more alloy; though that is generally of silver instead of copper. The common test of aqua-fortis is not always applicable to wrought ornaments; but those who choose may use the touchstone, which, however, though formerly in high repute as a test, is now

almost obsolete. The best of these is the Lydian stone, now found in the hills around the Scottish capital The mode of experiment is to rub lightly, or rather to draw the gold along its surface, not hard enough to rub off the metal, but just to leave a streak behind it, the colour of which is the test of purity. Gold alloyed with silver, beyond the due proportion, leaves a pale whitish mark; if alloyed with copper, the mark is brownish.

But in numberless instances, where the ornaments are so wrought as to be inconvenient for any kind of test, even by weighing, a careless purchaser may often be deceived with a base metal, merely covered with a very thin plate, or coat of real gold. As the manner of doing this may be useful to our fair readers themselves, in various ornamental processes in their own dressing-rooms, we may state that the method is to dissolve gold in aqua-regia, in which linen rags must be deposited, until the whole solution is absorbed. The rags, as soon as dry, must be carefully burt in a china cup so as to preserve the ashes, which form the golden powder; then take the article to be gilded—silver is always the best, clean it very bright; then cut a close-grained cork into a convenient shape and size, dip it first into clear water, then into the golden ashes, and rub them on the polished surface until it assumes a brilliant appearance, like the best gold. When ornaments or trinkets, in daily use, lose their colour and golden appearance, these may be very easily restored by this process, looking as well, and lasting as long, as if sent to the gilder, without the necessity of taking the article to pieces.

These general directions wlll be found of beneficial use in every-day purchases; but still it may

not be amiss to enter upon some short specifications of the various articles of ornamental jewellery.

The *Diamond*, of course, claims the preference, and consists of several varieties: the black species is so scarce as to be seldom found, except in mineralogical collections—they are, therefore, the most valuable: whilst the cheapest are those whose tints incline to brown or grey. For ornament, however, the most valuable are those whose transparency is perfect, and their colour of the purest white. Next to these are the specimens with a greenish tint; after these come the yellow: and next the blue varieties. But all of these, to command their full value, must be without flaw, and free from all intermingled tints. The hardness of the diamond is well known, and is one of its tests, especially in cutting glass; but there are other stones which will perform the same office. The real diamond will resist the hardest blow, or merely split into leaves; but that is a test which, in jewellery, cannot conveniently be tried. In the rough state they may, however, be rubbed together, when, if both real, a harsh grating sound is distinctly heard; and, whether rough or polished, a good judge will be able to ascertain their genuineness by the brilliant light which is seen to play with great lustre when in motion.

Substitutes for diamonds are sometimes made by exposing sapphires to a strong heat, which destroys their colour, but improves their hardness and transparency. Against such a deception a casual purchaser has no guard, except in the honesty and good character of his jeweller; and it will always be better to pay an apparently high price to a respectable dealer, than to risk being cheated by those who have no character to lose.

When diamonds, however, are purchased from

a good house, it will be proper to observe that the table-cut diamonds ought always to be the cheapest, as they are the thinnest: next to them are the rose-cut, which require a whitish-coloured foil; but the real brilliant is always upon a black ground, and produces even a finer effect if set round a good emerald.

Of the more valuable of the other precious stones, the real *Amethyst* will be known by its purple tinge; but rock crystals of a violet tinge are often substituted for them. The *Emerald* ought to be of a fine green, and of a hard texture, though not so hard as most of the more valuable kinds of stones. The *Ruby* ought to be of a fine brilliant purple; but the inferior species are often met with in rings. Since we have got possession of Ceylon, many of these have found their way into the market. The real ruby is nearly of equal value with the diamond, especially when of the larger sizes. The beautiful celestial blue of the *Sapphire* renders it a becoming ornament to fair complexions; but the real stone is of high value, increased, perhaps, by the trick of substituting it for the diamond, as already mentioned. The bright golden yellow of the *Topaz* makes it fitter for rings than for situations near the face of the fair. The Saxon topazes are the palest, though most transparent: they are even more brilliant, though less valuable, than those of Brazil, some of which are naturally of a bluish colour, or may be made so by the application of a powerful heat.

It is almost needless to enumerate the various ornaments in which the different precious stones may be arranged.

Bracelets, of course, may be formed of every species: but for general and not very expensive use the violet-coloured amethyst may be adopted.

Ear-drops, like the bracelets, admit of all kinds of stones that may suit the complexion. When formed of emeralds, the most valuable are seldom selected. Some very handsome ones have lately been made of the Chrysoberyl, which may be obtained in considerable quantities from the Brazils, where they are in much repute.

Necklaces of aqua-marine, when of a pale colour, look very handsome; but when of a deep green there are few complexions that will stand the foil; and even so with regard to the high crimson-coloured *Garnet*.

Rings generally have the most valuable emeralds; but where expense is an object to be avoided, the chalcedony forms a very handsome ornament, as does the hyacinth, of a beautiful blood red; likewise the onyx, a clouded or veined stone, and the opal, which displays a greater variety of colours than any other precious stone.

Of the cheaper kinds of ornamental stones we may enumerate the *Jet*, especially in mourning; for which use the *Jargon* was once in great repute, though not of a black, but dark brownish colour. The *Malachite* is of a fine green, and forms handsome necklaces: but is not considered as very valuable. The last we shall mention is the *Tourmaline*, which our fair readers may choose as being literally the most attractive. It is purely electrical when heated, and exhibits the varieties of positive and negative electricity, or of galvanism. A tourmaline ring, when rubbed, will attract straws, but whether it will, or will not, attract lovers, we must leave for female experiment.

With a brief notice of Pearls we shall close the subject. As these will sometimes become discoloured, they may be readily restored to their original purity by a simple process. Soak them in

hot water in which bran has been boiled with a little tartar and alum, rubbing them gently between the hands, when the heat will admit of it; when the water is cold, renew the application until the object is attained, when the pearls may be rinsed in luke-warm water, and laid on white paper in a convenient dark place to cool.

Due attention thus paid to outward appearance, we may join our friends at the

BREAKFAST-TABLE,

the various circumstances connected with which being equally applicable to the

TEA-TABLE,

we shall so far venture on an anachronism in the disposition of the day as to notice them together.

Respecting the economy of the tea-kettle we shall offer one hint to our fair readers, which is, that however cleanly their handmaidens may be, and however careful they themselves may be to procure the best water, yet almost every kind of water in use, except rain-water, will speedily cover the inside of the kettle with an unpleasant crust. This may be easily guarded against by placing a clean oyster-shell in the tea-kettle, which will always keep it in good order, by attracting the particles of earth, or of stone, or of such peculiar salts as the water may be impregnated with. To those who may wish for something of a more solid nature than tea at this meal, and who may yet be unwilling to pollute the fragrance of it with the grossness of animal food, we beg leave to recommend chocolate, as it contains a fine vegetable oil, which

lubricates the coats of the stomach as well as, if not better than, animal oils; and is much fitter for a delicate stomach than rancid ham, with its pyroligneous odour; especially if care be taken to procure it genuine, as it has been suspected that much of the chocolate sold here is adulterated with flour and Castile soap.

Perhaps the best mode of guarding against these tricks of home manufacture, for the nuts only can be imported into this country, is for the family to purchase the nuts, which, by a very slight species of manual labour, may be pounded sufficiently small for all domestic purposes. If pounded until perfectly oily, then a considerable saving may be made in regard to the quantity used; but they must be well dried in an oven previous to the operation.

That *chocolate* and *cacao* (or cocoa, as it is vulgarly termed) are objected to by medical men, as being too oily and heavy for the stomach, must not be denied; but the same objections do not lie against *miserable*, or the dried husks of the cacao nut. These produce a light and nutritious beverage, and deserve the notice of the economist.

We are not radical enough to recommend substitutes for tea or coffee; but we may state that the inhabitants of Irkutzk are in the habit of drinking different infusions in the place of tea, prepared from the leaves of the following plants:—Saxifraga crassifolia, clematis alba, pyrola uniflora, spiræa coronata, polypodium fragrans, pyrola rotundifolia (winter green), prunus padus (bird cherry), ulmus campestris (common elm), and rosa canina (common dog-rose); the last four of which are natives of Great Britain, and the last two, especially, abundant all over our island.

The universal use of tea, as an article of diet, silences any observations which might have been made with respect to its medicinal or deleterious effects on the animal economy. It is, however, somewhat remarkable that this powerful plant has seldom been used medicinally; and still more so, that other vegetables, possessing similar properties, should prove offensive, while this is highly grateful.

Before we enter further, however, upon its medicinal qualities, let us shortly analyze its properties in regard to domestic economy.

The best way to choose gunpowder tea is to try it by infusion; as it is too often adulterated with a mixture of common hyson, dyed a deeper green with verdigris, and rolled up like it in small round grains.

Hyson tea is larger in grain, and not so tenacious, as it will fall to dust with a slight pressure of the finger; yet its leaf is large after infusion. Its infusion is deeper coloured than the Singlo, which may be known by the flatness of its leaf, whilst that of the Hyson is round.

These are green teas.—The best of the black is the Pekoe, yet it is little used here, in comparison with the northern parts of Europe, where it is a great favourite. Next is the Souchong—but very little of the real sort ever comes to this country; that which goes by its name being merely the best Congo, which has a much larger leaf, and is allowed to come to greater maturity before pulling.

As a test in general to distinguish genuine tea from the sloe leaf, let it be infused, and some of the largest leaves spread out to dry: when the real tea leaf will be found narrow in proportion to its length, and deeply notched at the edges with a

sharp point; whilst the sloe leaf is notched very slightly, darker in colour, rounder at the point, and of a coarser texture.

Some very curious experiments have recently been tried on the quantity of matter soluble, in water, of tea of various qualities. From these it appears that the best Green Hyson, at about fourteen shillings per pound, has forty-one parts in one hundred; and that the best Black Souchong, at about twelve shillings, has thirty-five in one hundred. The soluble matter in the Hyson invariably diminished with the quality of the leaf down to thirty-one parts in one hundred; but that was not the case with the Souchong, since the common leaf at six shillings yielded as much soluble matter as the very best, whilst the middle-priced exceeded them as thirty-seven to thirty-five.

In regard to medicinal qualities, tea very generally restores regularity to a pulse which is habitually or frequently irregular: the reverse of this however, is sometimes, though rarely, observed. Green tea may prove very beneficial in the higher degrees of fever, especially pulmonary consumption, where, as the quantity of fluid daily drunk is considerable, the tea may be diluted to that state which is found most palatable. In some cases its good properties are much increased by the addition of a little juniper: with this fact drunkards are acquainted, who make use of green tea punch to obviate the plethora attendant on their excesses.

In other cases it acts as an antidote. A very delicate lady once took, in a mistake, two ounces of camphorated tincture of opium; the effects were soon apparent, and a physician was sent for. With great difficulty she swallowed a cup of strong green tea, which soon proved a complete emetic.

She drank some in a weaker state, and was soon perfectly recovered. Not having swallowed more than four grains of opium, no permanent ill effects could be expected.

In preparing the fragrant infusion for the tea-table, a good economist will be careful to have the best water, that is, the softest and freest from foreign mixture. If tea be infused in hard and in soft water, the latter will always yield the greatest quantity of the tannin matter, and will strike the deepest black with sulphate of iron in solution; consequently, according to the technical term, it will always be found "to draw best."

In the management of the tea-urn, it may be observed, that a polished urn may be kept boiling with a much smaller quantity of spirits of wine, than when a varnished or bronzed one is used, so that a silver urn is actually an object of economy. Whatever may have been said against tea, in itself, we must confess that we are by no means friendly to the substitutes that have been offered for it: because we are confident that neither nationally nor individually will they eventually be found cheap or economical. If substitutes were universally to be adopted, our China trade and shipping, and a considerable portion of export trade, must be annihilated. If tea were left off entirely, we know of no saving that would ensue, except, perhaps, in the article of scandal.

But, whilst professing to disapprove *in toto* of those attempted substitutes, we may, without injury either to the health, or to the revenue, record that vine-leaves, dried in the shade, make a most excellent beverage.

That we shall ever be able to raise tea for our own consumption, or in a hot house, so cheap as

we can import it, is by no means likely; yet it is certainly true that M. Deschamps, an agriculturist and botanist of Lausanne, has communicated some interesting experiments on the culture of the tea-tree of Japan, which have convinced him that it will succeed perfectly well in Europe, if the seed be sown in a proper soil and climate. He accompanied his paper with directions how to gather and prepare the leaves for use. Having analysed tea of his own raising, he found that it contained neither tannin nor gallic acid, which common tea contains, and to which is ascribed the property of affecting the nerves, and producing trembling.

It may be superfluous to add that in laying down a scale of domestic economy, the expenditure of tea, where it is used morning and evening, may be put down at the rate of two ounces per week for each individual; and that of sugar at about three quarters of a pound for the same period.

Coffee has been so much talked of, so much written about, and so much used, that it may appear superfluous even to offer a hint respecting it. We shall, however, record a few particulars not undeserving of notice. The best coffee is always the cheapest. Burn it at home in small quantities; taking care, if using a close roaster, never to fill it more than half. Turn the roaster slowly at first, more rapidly as the process advances, and keep up a lively fire by the repeated addition of chips or other inflammable materials, in small quantities. Burn the coffee until of a light chesnut colour. Keep it in close canisters or bottles. Grind it as wanted. Boil it, in a vessel only half full, to prevent boiling over, in the proportion of one ounce and a half to a pint of water. Put in a few harts-horn shavings, or isinglass if you will; but if the

coffee is taken off the fire whilst boiling, and set on again alternately, until nothing remains on the top but a clear bubble, and then some poured out to clear the pipe, and poured back again, it will be as fine as if cleared artificially.

We may add further that the Dutch, so noted for making good coffee, never boil it, but merely infuse it in hot water, in a close vessel. They roast it until uniformly brown and clear, and with butter or sugar to prevent its burning.

The French, however, roast it to a coal, and produce a high-coloured decoction.

Observe that long boiling does not make coffee stronger, but has the certain effect of destroying its colour, and rendering it more turbid, with the unpleasant effect that, if cleared by isinglass or white of egg, the oily matter is precipitated, and the flavour almost totally destroyed.

In making coffee, observe that the broader the bottom and the smaller the top of the vessel, the better it will be.

The Mocha coffee, or Turkey coffee, has generally been esteemed the best; but it is now understood that the Java coffee is superior, as it contains a considerably greater proportion of oil. This oily or extractive matter, however, is easily dissipated by exposure to air.

It is well known that on the introduction of coffee into western Europe, a great outcry was raised against that beverage, which was pronounced to be an absolute poison. It was with reference to this opinion that Fontenelle, whose favourite drink was coffee, and whose life was prolonged to very near a century, observed—"If coffee is a poison, it must be a very slow one, for it has been above eighty years killing me."

We do not, however, recommend its use generally. At breakfast it is unnecessary as a stimulant, though very agreeable and useful after dinner, particularly after a frugal one, when milk coffee is best, yet still to be used in moderation.

Coffee may be made from turnips, parsnips, or beet root; but best from the blue succory, or cichorium intibus of Linnæus. Even in making real coffee, a small portion of the latter is a pleasant addition; or else a very small quantity of common table salt.

But we recommend not any of these substitutes. We wish to improve the revenue, and to encourage our own West Indian Colonies. The slight saving to individuals would be nothing, but disuse in the aggregate would be ruin to thousands.

Though recommending infusion of coffee only, or at least nothing more than rapid and short boiling, we should do injustice to our readers, if we did not present them with another and an economical mode proposed by an intelligent correspondent to a periodical work of celebrity. He says:—

"My process is that of *simmering* over the small but steady flame of a lamp—a process at once simple, easy, and (without watching or attendance) uniformly productive of an extract so grateful to the palate and the stomach, as to leave me neither the want nor the desire of any stronger liquor.

"But to accomplish this a vessel of peculiar construction is requisite: mine is a straight-sided pot, as wide at top as at bottom, and inclosed in a case of similar shape, to which it is soldered air-tight at the top. The case is above an inch wider than the pot, descends somewhat less than an inch below it, and is entirely open at the bottom; thus admitting and confining a body of hot air all round

and underneath the pot.—The lid is double; and the vessel is, of course, furnished with a convenient handle and spout.

"In the *simmerer* the extract may be made either with hot water or with cold. If intended for speedy use, hot water will be proper, but *not* actually *boiling;* and the powdered coffee being added, nothing remains but to close the lid tight, to stop the spout with a cork, and place the vessel over the lamp; where it may remain unnoticed and unattended, until the coffee is wanted for immediate use. It may then be strained through a bag of stout, close linen, which will transmit the liquor so perfectly clear, as not to contain the smallest particle of the powder.

"The strainer is tied round the mouth of an open cylinder or tube, which is fitted into the mouth of the coffee-pot that is to receive the fluid, as a steamer is fitted into the mouth of a saucepan; and, if the coffee-pot have a cock near the bottom, the liquid may be drawn out as fast, and as hot as it flows from the strainer.

"If the coffee be not intended for speedy use, as is the case with me, who have my simmerer placed over my night-lamp at bed-time, to produce the beverage which is to serve me the next day at dinner and supper—in such case cold water may be used with equal or perhaps superior advantage; though I have never found any perceptible difference in the result, whether the water employed was hot or cold. In either case it soon begins to simmer, and continues simmering all night, without ever boiling over, and without any sensible diminution of quantity by evaporation.

"With respect to the *lamp*—although a fountain-lamp is undoubtedly preferable, any of the

common small lamps, which are seen in every tin-shop, will answer the purpose, provided that it contain a sufficiency of oil to continue burning bright during the requisite length of time.—The tube or burner of *my* lamp is little more than one-eighth of an inch in diameter; and this, at the distance of one inch and three quarters below the bottom of the pot (with the wick little more than one eighth of an inch high, and with *pure spermaceti* oil), has invariably performed, as above described, without requiring any trimming or other attention, and without producing any smoke; whereas, if the wick were too high, or the oil not good, the certain consequences would be—smoke, soot, and extinction.

"One material advantage attending this mode of coffee-making is, that a smaller quantity of the powdered berry is requisite to give the desired strength to the liquor. The common methods require that the powder be coarse; in which state it does not give out its virtue so completely as if it were ground finer: but in this process it may be used as fine as it can conveniently be rendered; and the finer it is, the smaller will be the quantity required, or the richer the extract."

The social breakfast meal dispatched, and the company breaking up, let us first accompany the gentlemen to the

HUNTING PARLOUR,

provided the weather prompts to out of door amusement. The real sportsman, should he even deem a classical library superfluous, will not fail to decorate his hunting parlour, in addition to his fowling-pieces, fishing-rods, and sporting prints, with

the best treatises on hunting, shooting, angling, racing, farriery, and the game laws.

In regard to the purchase of fowling-pieces, Nock and Manton may be consulted by those with whom a good piece, and not absolute economy, is the first object. Yet in the purchase of a good fowling-piece, even though at first expensive, there may be economy, provided it is afterwards well taken care of. He that sports because it is fashionable, will leave the care of his gun to his groom, or game-keeper; but he that is actuated by a true love of the sport will take care of it himself. In regard to this, the blacking or browning of the barrel is the first necessary process.

The object of the first of these processes, is in the first instance to prevent oxydation; which is done by a mixture of black lead with hogs'-lard, in which a small portion of camphor has previously been dissolved; but this retains so much of the grease as to be unpleasant, so that the second process becomes preferable.

The best browning would certainly be the natural oxydation of the metal; but as the necessary exposure for that purpose would act equally on the inside, which is to be avoided, it is more expedient to hasten the oxydation by an artificial process, which consists in nothing more than washing the outside of the barrel with diluted aqua-fortis, or a solution of blue vitriol, rubbing it well with wax a few days afterwards. This performed, common cleanliness is all that is necessary.

The care of gunpowder is also an object of economy, especially in the grouse and black cock season, whilst sporting on the moors of Yorkshire, or the mountains of the Highlands, where a fresh supply cannot always be had the moment it may be

wanted; whenever, therefore, through accident, or the absolute dampness of the climate, powder may become damaged, it must not be considered as worthless and thrown away, at least so long as the granulation is not destroyed. If circumstances will permit, it must be dried in the sun, or open air; if not, it may be carefully restored to dryness by culinary heat: after which, if it can be got, half a pound of good ought to be put to every pound of damaged powder; adding to every pound and a half of this mixture, a quarter of a pound of powdered quicklime, when the powder will be found as good as at first.

Even the best powder may be improved in an extraordinary degree; but it is doubtful whether for sporting purposes. For other uses, however, the process is said to be highly efficacious, the inventor asserting that he has found that saw-dust, particularly of soft wood, mixed with gunpowder, triples its force.

In regard to the saving of time and patience by the much-vaunted detonating powders, we have not a great deal to say; but as several accidents have happened from want of the extreme degree of caution necessary for the management of those dangerous materials, we may here record that two German chemists profess to have composed a new detonating powder, which is not liable to spontaneous explosion. It consists of fifty-four hundredths of super-oxygenated muriate, twenty-one of ordinary nitre, and seven of powder of lycopodium, or club-moss A stroke from a very hard body is required to produce detonation, which takes place only on the part that receives the blow; the neighbouring parts being fired by communica-

tion, but without violent explosion, so that this powder is absolutely free from danger.

To the veterinary surgeon we must leave the care of the horses: but we would recommend to every one who wishes to save valuable cattle not to trust them, without his own inspection, to the management of every farrier who chooses to dub himself a Member of the Veterinary College; otherwise he may meet with the same fate as the Irish gentleman, whose farrier sent him in a bill—"To curing your honour's horse till he died, 2*s.* 8½*d.*"

A Mr. Torchon has obtained a patent for a warm bath for horses, which is constructed in the following manner:—The bath is sunk in the ground, the top of it being even with the surface, and above it is a wooden platform, pierced with a great number of small holes, and supported by two moveable cross pieces, serving as the base to a frame, which is suspended at the end of a lever by means of a hook and four iron rods united at the hook. The horse is placed on the platform, suspended in the frame by two girths, and then raised by means of a windlass at the end of the lever: the two cross pieces which support the platform are withdrawn, the windlass is turned, and the horse descends into the bath, where a thermometer is placed, and into which water, either cold or warm, may be introduced by two cocks.

We are not aware that our books of farriery contain the following recipe, which is given in an American paper as an effectual cure for a horse having a film, as it is called, over his eyes:—"Take a little clean hogs' lard on the end of your finger, rub it well in the quadruped's eye once a

day, for three or four days in succession, and the film will be removed effectually."

We may also add, where positive economy is an object, that it has been ascertained from experiment, that a horse fed on bruised oats will look as well, and do as much labour, as one fed on double the quantity of the grain not bruised.

But we may now quit the care of horses, and point out to the thoughtless sportsman how to take a little care of himself: for this purpose, whilst on moorish or northern expeditions we must particularly recommend to him, when returned from the day's excursion, to change his clothes instantly, if wet; but in all cases to pull off his shoes or boots, that they may be wiped clean whilst wet, and then slowly dried. A strict attention to this will save leather, blacking, and health.

It must be recollected also, that it is difficult to keep out wet in a day's shooting, even with the best new shoes, more or less prepared for the purpose; and that water-proofing is therefore absolutely necessary for those who pay any regard to their health, and who wish not in youth to lay up a store of sickness for middle life and old age.

When the regular process for water-proofing cannot be conveniently gone through, a good succedaneum may be found in warming and mixing well equal quantities of mutton suet and bees' wax; applying it, whilst hot, to the soles and seams. If it is then permitted slowly to dry, it will take the blacking equally well with the other parts of the shoe or boot.

Or, for a permanent remedy, take a quart of linseed oil, to which add one ounce of rosin, and three ounces of red lead, or litharge, boiling the mixture until it will stick to the finger when

cooled. To this mixture, when cooled, add a pint and a half, or a quart if necessary, of spirits of turpentine, stirring it up until of the consistence of sweet oil. Let it stand for a day: then pour off the clear liquid: add an ounce of lamp black and an ounce of Prussian blue, first intimately rubbed together in linseed oil. Give the boots or shoes repeated coatings until complete.

The new patent water-proof composition consists of the following materials: Boil six gallons of linseed oil, one pound and a half of rosin, four pounds and a half of red lead, litharge, or any other substances usually called dryers, together, till they acquire such a consistence as to adhere to the fingers in strings when cooled; then remove the mixture from the fire, and when sufficiently cooled, thin it to the consistence of sweet oil, with spirits of turpentine, of which it commonly takes six gallons. Leave it to settle for a day or two, pour off the liquid from the grounds, and intimately mix with it one pound and a half of ivory or lamp-black, and one pound and a half of Prussian blue, ground in linseed oil. The composition is then ready to be used on any kind of leather or cloth. Stir up the liquid, and apply it with a brush till an even gloss is produced; hang up the material acted upon till the next day, taking care to leave the surface as even as possible, and proceed in the same manner till it has the desired appearance.

It is remarkable that the badger's skin, instead of being used solely for covering trunks, has not been adapted to personal use for boots or shoes; for it is naturally water-proof, and requires no preparation.

But the whole morning need not be allotted to

field sports; and, before the hour of dressing, an hour or two may well be devoted to the

LIBRARY.

To cherish the love of literature is certainly our wish in this department of the work; but by no means to encourage literary extravagance—even though we should not be able to teach much absolute economy. We conceive, however, that as order is the nurse, if not the parent, of frugality, so we shall be enabled, by pointing out necessary arrangements, and by giving a few useful hints, to save our readers from incurring extravagant and unnecessary expences, and to form a library complete in all its parts at a moderate rate.

One of the most important leading points in rendering a library comfortable, as it is too often the least used room in a house, consists in producing an equal temperature, not only in all parts of the apartment, but, as nearly as possible, at all seasons of the year; for which purpose there ought always to be a free circulation of air, and also for the preservation of the books: besides this it ought to be well and equally lighted, as far as possible. In small establishments, where the various members of the family are accustomed to read in all the apartments, they must often read in extreme degrees of light, which is peculiarly injurious to weak eyes. This inconvenience, however, may be obviated in a library by various modes of preserving the temperament of the light, on the principle that there is nothing which preserves the sight longer than always using, both in reading and in writing, that moderate degree of light which is best suited to the eyes: since too little

strains them, whilst too great a quantity dazzles and confounds them.

It may also be taken as a general rule, that the eyes are less hurt by the want of light, than by the excess of it; unless they are actually strained to see objects for which the degree of light is inadequate.

It ought to be remembered also that the light must be graduated according to the size of the print, and the colour of the paper. For all these purposes, especially where a gothic library is fitted up, nothing answers better than windows, not of gaudy party-coloured, but of light green glass, accompanied also by green shades of various thicknesses, which may be temporarily fitted to the windows by an ingenious process.

On subjects where to possess all the absolute facts is of most importance, the newest works are, generally speaking, most likely to be the best; but this is very far from being applicable to a library in all its departments. Yet even in works of philosophy or fancy, a careful and economic selection may be made, so as to contain all that is necessary in a small compass, but leaving the extension open to taste and to future circumstances.

There is no part of domestic economy in which it is more true than in regard to the library, that "a stitch in time saves nine." We must therefore recommend a careful repair whenever necessary, but yet to be done so judiciously that a skilful workman at a future period may be able to undo it without injury to the book.

For the general care of a library, however, we willingly refer to Horne's very useful work on Bibliography. We have merely to point out to those who will take care of their own books, that

in all repairs, both of books and of prints, whenever paste is necessary, it ought to be made of the freshest flour well kneaded in cold water, and then boiled leisurely; adding a small quantity of powdered alum, when it will form a white transparent substance, that will not discolour the finest India paper. But when the paste is to be used in bookbinding, or in repairs where the colour is not material, the juice of aloes may be added, forming an infallible preventive against the ravages of the worm. It must also be recollected, that although Russia binding is most expensive in the first instance, yet it is in the end the most economical, as books bound in Russia leather are not subject to be attacked by moths. Powdered alum sprinkled over the shelves of a library, or in the interstices of books whilst binding, is efficacious against worms; or a larger proportion of alum may be added to the paste. Sulphate of iron in small quantities has also been recommended.

Spiders and other vermin ought to be carefully attended to; but it will be better to prevent than to destroy them. We are no friends to the system of cleanliness which passes sentence of death upon myriads of living animals; yet we are not disposed to carry that principle to an extreme, like the late benevolent Mr. Day, of whom the following anecdote is recorded:—

"One day, upon removing some books at the chambers of Sir Wm. Jones, a large spider dropped upon the floor, upon which Sir William, with some warmth, said, 'Kill that spider, Day, kill that spider!' 'No,' said Mr. Day, with that coolness for which he was so conspicuous, 'I will not kill that spider, Jones; I do not know that I have a right to kill that spider! Suppose when you are

going in your coach to Westminster Hall, a superior being, who, perhaps, may have as much power over you as you have over this insect, should say to his companion, "Kill that lawyer! kill that lawyer!" how should you like that, Jones? and I am sure, to most people, a lawyer is a more noxious animal than a spider.' "

When books meet with accidental damage, means ought to be taken instantly to repair it. Ink-spots, in particular, may be removed from books or prints, by the citric or oxalic acids, if carefully applied with a hair pencil; but the muriatic acid must be avoided, as it both discolours the paper and rots it.

When books or copper-plate prints require bleaching, or cleansing, whether losing their colour by age or accident, it will always be the safest way to put them in the hands of a professed artist in town; but the country resident, if he chooses to try one or two experiments upon books of little value, before he ventures upon one of his "lions," may adopt the following process:—

Form a bleaching liquid, by dissolving oxymuriate of lime in four times its quantity (by weight allowing a pint of water to be a pound) of warm water; next take the book from its binding, place the leaves separately between plates of window-glass, fixing them vertically in a proper vessel, and then pour on the liquid, in which the paper must remain for twenty-four hours. The liquid must now be poured off, and the paper carefully rinsed in soft water, then dried, pressed, and the book re-bound.

As this process, though it removes writing-ink, does not take out oil or grease, which would endanger the printing, it will be proper to remove

those spots beforehand, which operation may be thus performed.

First soften the spot carefully by heat, and take up as much of the oil as blotting-paper will absorb; after which apply the rectified oil of turpentine, with a camel's hair pencil, to the spot on both sides until the turpentine unites with the oil and forms a soap, which will come off with the brush as it is generated.

Should those spots be taken out of a book which does not otherwise require a general bleaching, the part thus cleansed may be restored to its pristine whiteness by the application of a brush or pencil dipped in a mixture of spirits of wine, with half its quantity of sulphuric ether.

With a little care and attention this may be done neatly and well.

Prints may also be bleached in the sun upon grass, confined down by netting: but the process will require some days.

Under this head of our work it may be permitted to us to offer a few economic hints respecting the *Fine Arts*.

It has been said with much energy and great truth, that since the days of the Greeks, no nation or people have possessed so fine a soil for the production of genius in art as Britain; and yet we have twice suffered the thriving plants to be ravished from our land, and transplanted to where they have but sickened, in the foreign and unhealthy hot-houses of despotism and tyranny. Scarcely had they again sprung up on the spot whence they were rudely torn by the austere reformers in the seventeenth century, and again by the Round-heads and self-named Puritans of Oliverian Bœotianism, when we would have suffered

the false assertions of a Du Bos and a Winckelman to have destroyed them once more, because French vanity and German pertinacity thought proper to assert that our climate is too hyperborean for their cultivation. We have seen, however, that from the first dawning of classical taste in Britain, the singular height to which that taste has attained by the talents and liberality of those who have graced their country with many of the most genuine and perfect of antique remains, added to our own efforts in painting and sculpture and all their sister arts, is a most convincing proof of our national superiority.

Much yet remains to be done, however, to spread not only a taste, but a *respect*, for the arts, through the various classes of society. In short, the knowledge of the arts, we fear, must remain circumscribed, until a respect for them is more strongly inoculated, as it were, into the great mass of the people; until a stop is put to those infamously scribbled autographs which disgrace the metropolitan cathedral, and to that avaricious taste of bill-sticking, which, if permitted, would shortly cover even the revered venerable remains of Henry the Seventh's Chapel.

This unfortunately operates as a very heavy drawback upon the liberality of art, and leaves us without a word of defence, when it is urged how much every visitant to France and Italy remembers with pleasure the liberal admittance which is always found to their superb repositories of the arts, uninterrupted by petty objections, or exorbitant demands for money, or any change in our feelings from admiration to disgust, by the paltry or mischievous disfigurement that attacks almost every object of art in Britain.

It is true, that many lovers of the Fine Arts are endeavouring to imitate foreign liberality in this respect; but much, much remains to be done.

But to proceed more particularly to our subject: we certainly recommend to such of our readers as possess good library apartments, to occupy them, in some measure, with specimens of natural history; even to the formation of a cabinet, which may be done at a very cheap rate, and to extend it to objects of art, as occasion may permit.

To show how this may be done at the smallest expense is now our task.

We have noticed in a German publication a description of a museum of natural and artificial curiosities, which occupies eight rooms. Two are devoted to the animal kingdom, among which are some thousands of conchylia in excellent preservation, a rich collection of butterflies, numerous varieties of the lizard tribe, the eggs of almost every species of European birds, different kinds of dried sea-fish and tortoises, and an extraordinary assemblage of beautiful zoophytes. The next two rooms are filled with productions of the vegetable kingdom, pleasingly arranged; the flowers and seeds of almost all the plants of Germany, many foreign ones, and a striking collection of many hundred species of wood, from the bark to the pith. Two more rooms contain specimens of minerals; and the two others are occupied with artificial curiosities of the Romans, the ancient Germans, the Chinese, and Japanese, which are of great value on account of their rarity. A very numerous collection of coins and medals, and some hundred of sulphur pastes are about to be added. The whole is systematically arranged according to Linnæus, Blumenbach, and Werner, and is estimated at the value of 24,000

dollars, or about 5,500*l.*; but an equally interesting collection may be formed at a trifling cost, from the productions of our own country. From Cornwall we may have ores of copper and tin, in all their various combinations with sulphur, lime, &c ; from Derbyshire, lead in its various forms, also spars, petrifactions, &c.; from Nottingham and Derbyshire, marbles and gypsum; from the sea-coast, shells and aquatic plants of immense variety; from Northumberland, coal, pyrites, &c.; from Lancashire, iron ore, and numerous specimens of stones from the mountainous districts of the Lakes; and from Scotland and Ireland specimens in all the branches of natural history.

Then how cheap an amusement, yet how interesting, are the *Horti Sicci*, or book gardens of dry leaves, flowers, or aquatic plants, &c. To prepare these latter may agreeably occupy many idle hours at marine watering-places. The process is extremely simple; nothing more is necessary but that all the smaller plants should be expanded under water, in a plate, upon a piece of writing-paper sunk to the bottom. In this state they will assume their natural form and position. The paper, with the plant upon it, must be withdrawn from the water gently; and the plant and paper must afterwards be placed betwixt two or three sheets of blotting paper, and pressed with a book or flat board. When taken out from hence it is to be put betwixt fresh sheets of paper, until all the moisture appears to be gone. It is then to be laid up in a quire of blotting paper, under pressure for a day or two, when, if dry, it may be placed permanently upon writing paper. The larger coriaceous kinds require a good deal of drying in successive changes of paper, and in a very dry room, or near the fire.

When once dried, and put into an herbarium, they never become damp again.

The mode of preserving leaves is as simple:—take two leaves of every sort intended to be preserved; lay them inside of a sheet of blotting paper; place them under a considerable pressure, and let them remain during the night. Open them the next morning, remove them to a dry part of the paper, and press them again for the same space of time. They may then be placed in the book intended for the purpose, and fastened down with a little gum, with the alternate sides turned out, and the name written, with such other observations as the artist may think proper. But where rapidity of preparation may be necessary, there is no better means of drying specimens of plants than laying them between two sheets of paper, and covering the uppermost with hot sand.

The preparation of flowers requires rather more care and application. Prepare a square box, filled nearly with fine sand well sifted, and dried in the sun. On this place the flowers with their stalks nearly cut off, fixing them in the sand at equal distances, and as near the same height as possible. They must then be covered with sand, sifted on them gently, so as just to be covered, but not borne down with the weight. The box must now be exposed to the sun for at least six hours, during two successive days; after which the flowers must be lifted carefully up, and placed one by one in a sieve, which must be gently shaken until all the sand is off the flowers, when they will be found perfectly dried, firm in their texture, and preserving all the beauty of their forms and colours. They may then be fitted to small cases, in agreeable ar-

rangements, and covered with glass to preserve them from dust and damp.

To make such a cabinet useful as well as pleasing, every species of stone and slate ought to be introduced without regard to beauty; also specimens of various woods, and small boxes or drawers with compartments filled with every kind of grain and dried seeds. If the collector wishes to enrich his cabinet with ornithology, it will be his best and cheapest mode to have his birds preserved by artists who make it a profession, as failure on his part might spoil a fine specimen; but we add a varnish that will be found extremely useful in preserving insects as well as small animals.

Take one pound of rectified spirit of wine, and two ounces of white succinum; digest the whole over boiling water during forty-eight hours; add thereto an ounce of white sandarac, and of white mastic, and an ounce and a half of Venice turpentine; digest the whole, as before, during twenty-four hours to an entire dissolution. Take out the intestines of the insects you have a mind to preserve; then lay the insects for some days in rectified spirits of wine, mixed with clarified sugar-candy: afterwards besmear them with your varnish till they are transparent as glass. In this manner you will preserve them for a long time. This varnish succeeds equally with vegetables and fruits, which never rot or decay when not affected by the exterior air, as has been observed in regard to cherries, which are preserved perfectly well by covering them with melted white wax. Humanity will always point out that the insect should be dead before preparation. This may be done by hot water, or spirits of wine, or a drop of oil

of turpentine on its head, or by gently squeezing the breast, as in regard to butterflies and that species.

The chalcographimania has now reached such an extent, that we can scarcely dare say a word in favour of it upon the score of economy. Yet still even the economical amateur may venture upon a few specimens to complete the arrangements of his library. He may collect a few engravings on wood, by Holbein and Switzer; but if he wishes for copper-plates, he will find nothing before the time of Elstraacke of any value, except for its antiquity. After him follow Deleran, the Passes, &c.; but on this head we must refer our readers to Walpole, Strutt, and other writers on chalcography.

The next department of a good library is that of medals: they are always an ornament and useful appendage to it. Even considered only as pieces of antiquity, they form a pleasing amusement for the curious; but when properly and in due course applied and made the constituent parts of history, they become most valuable acquisitions. In short they have ever been a popular mode of commemorating great national events. Their infrangible and lasting composition enables them to outlive the productions of the pencil or the chisel, and their minuteness and cheapness render them a very proper medium to disseminate and perpetuate among all classes, the importance and extent of our victories.

Taking them up on the most economical scale, the young collector must never forget that their absolute value for himself, and their value at a future sale, consists in the elegance, the history, the size, and the scarcity of the piece, without any

particular reference to the metal itself, unless the real value of the medal should be indifferent.

In regard to elegance, he must study the delineation and its entireness, then the beauty of the delineation, and its sculpture.

As to the true ærugo, or classical rust, it is not less valuable whether red or green; for in both cases it equally defends the medal against the injuries of time.

Rarity also causes dearness.

It must be observed that medals are ranked in three classes: the great, the middle, and the small—distinctions determined rather by the size of the head than by the size or thickness of the medal itself. The sides, or tables of a medal, are the face or obverse, and the reverse; the exergue is a motto sometimes found on the outside of the rim.

Antique medals are seldom seen perfectly round; and their edges in general are cracked. The reason for this is supposed to be that the ancient medallists first melted the metal, pouring it into moulds of the intended size, and when it was hot stamped it with a heavy hammer.

But ancient medals are not absolutely necessary for a cabinet on an economical plan; nor is it best to begin with them, as the larger the collection becomes, the more anxious is the collector for unique specimens, which can only be had for extravagant prices. Nay, where there have been but two medals of a kind known to exist, the desire to render his own an unique has prompted more than one collector to use undue means to procure or to destroy that of his rival possessor.

With regard to modern medals, we must agree

with a judicious essayist, who observes that in France the art of medal-engraving has been much more successfully practised than in England.—Simon, who lived in the time of the Commonwealth and of the reign of the second Charles, is almost the only medallist of note which this country has produced—a circumstance at which we are the more surprised, as we conceive excellence in this department much easier of attainment than in those higher arts, which in Britain have always maintained an equal rank with her continential rivals. Our poets, our painters, our sculptors, and our architects, have hitherto sustained the intellectual reputation of the island; and we are certain that native medallists only need patronage and encouragement to enable them to support with equal success the honourable claims of English artists.

From this opprobrium we are, however, at length released, as the series of national medals brought forward by the public spirit of one individual must sufficiently testify. We observe also that a medallic museum, for the use of amateurs, and the supply of collectors, was recently established; but since the publication of the first edition, it has failed through want of due encouragement.

To form a collection of Roman coins, issued during their occupancy of this island, is a work of little labour and expence: attending a few auctions in London will complete it; or if a small number be afterwards wanted, there is a variety of shops in London where they can be purchased for a trifle. But of British coins, with the exception of those of Carausius, few are to be met with before the time of Alfred.

Gold and silver medals, as we have already no-

ticed, have in general no superior value over the brass, except in the value of the metal, which often becomes a point of very minor consideration. Indeed the brass are almost always finer as medals, being larger, and therefore having more space for legends and devices.

There is nothing in which a tyro may sooner be deceived than in his purchase of medals. To afford him some assistance we offer the following hints. Counterfeit brass medals are generally less worn than the antique, and less corroded. The letters have a modern look. The varnish is black, greasy, shining, and soft upon pricking it; whereas the ærugo of the antique is cleanly, bright, and hard as the metal itself.

Counterfeits are always circular; but the real antique are seldom, if ever, so regularly round; especially since the reign of Trajan. Of the era previous to that, from Julius Cæsar to Hadrian, all are suspected, and few now to be met with are genuine.

Nor is the system of counterfeits of very modern date; for even Pliny the elder informs us that false coins were made in his time, and he mentions the fact of a statue being raised in honour of a man who had discovered the means of distinguishing them. It is a curious fact also that some Roman collectors actually laid up the counterfeits as curiosities; and the rage became so general, that a false denarius was often purchased at the expence of many that were genuine. So much for Roman economy!

The collecting of *Gems* is too expensive to form a part of our economic lessons, further than to offer a few hints on the *Glyptic* art, and to point out a cheap mode of deriving every real advantage

from them, except that of possessing the real ones.—*Gems*, like *medals*, are extremely useful as an adjunct to the library; because they not only illustrate various parts of classic history, but also oblige us to examine the pages of ancient writers, in order fully to understand them. Those advantages may be enjoyed either by means of sulphur casts, or accurate engravings.

Gems are either camoes or intaglios, and are to be seen as rings and seals. It is almost needless to remark that the cameos are raised upon the ground, whilst the intaglios are cut in; the latter alone serving as a seal. The antique gems display manners, customs, and facts, besides being models of taste. They are generally cut upon precious stones, with the exception of the diamond, sapphire, or ruby, the hardness of which the ancient workmen could not overcome; but rock crystal is very common from the earliest antiquity, also opal, chalcedony, onyx, and the cornelian which appears to have been most in use. In Egyptian gems the intaglios predominate; but in Grecian and Roman the cameo is most frequent.

Modern counterfeits are made of glass in peculiar preparations, at which the Italians are very expert. In these the colouring is in general excellent, though without the real lustre; but their comparative softness, when touched by an instrument, will always betray them.

In short, on an economical plan, and for real use, we should recommend the plain honest substitutes of engravings or sulphur casts, which will form accurate and well-defined camoes from intaglios, and *vice versâ;* and indeed will even admit of second casts being taken from themselves, so

as to restore the cast to a fac-simile of the original. The process is so simple that any one can practice it; by merely melting sulphur in a crucible until it is liquid, allowing it to remain for some time over the fire, and then pouring it into water, when the impression may be taken with facility. Exposure to the atmosphere restores it to its original hardness, without injuring the finest and sharpest lines.

Steatite, or soapstone, is used for copying gems, and will receive any colour; but as it requires a tedious process of hardening in the fire, it is not so convenient for common use.

In regard to collecting PAINTINGS much might be added, were it not that so much has been said by Reynolds and other writers of eminence.

If we were to recommend the forming a collection to such of our readers as are forced to add economy to a love of the art, it would be on the plan of procuring a series of paintings, one of each painter from the time of Holbein, as a practical history of our advance in that department of taste. For the real *English School*, however, we must commence with the reign of our late revered Sovereign, so justly distinguished for his general knowledge and love of the arts, and who improved the collection at Buckingham-House even to excellence.

Incited by his noble example, several of the nobility and gentry began to engage in this branch of *virtu* with a competition of taste and expense which has, of course, given us many valuable collections. Painting has been preserved here in the general wreck of nations; nay more, an English school has been formed, which, though less glaring than the Flemish and Venetian masters, possesses

all the advantages of bright colour, softened down by all the magic art of the chiaro-scuro.

We are indeed, accused by foreigners of being more partial than any other nation to portraits. It is true that we are so, because we are a domestic nation, and in addition to our self-love, we love our friends and relatives. It may be true also that we display more admirable talents in portrait than in history; but even those who say so allow that in portrait our natural expression of beauty and grace is unequalled. That indeed is a circumstance that ought not to create surprise, when we consider the *models* from which our artists copy in the daily exercise of their art.

Perhaps, too, even in colouring, we have an advantage over other nations, in consequence of painting on glass being so much encouraged amongst us.

It is a curious coincidence that glass is certainly the most perfect vehicle both of sound and of colour. Well indeed has an amiable writer judged, when exclaiming, how exquisitely refined are the tones of the harmonica or the musical glasses, when touched with delicacy and skill; and how much have the most exquisite tints of Reynolds and West gained by their being transfused over the surface of the storied window!

In landscape-painting also, we may ask, who can excel us? It is true, as has been said, that the compositions of Claude are all simple and unconstrained: you feel that it is the representation of a scene which you have never had the happiness to behold; but still there is an air of reality which cherishes the belief of its existence. Amid the rigid forms and unnatural hues of inferior painters, you may often discover much to admire, but the illusion is destroyed by defective and obtrusive

parts; whilst in the works of Claude you may fancy yourself the distant and unobserved spectator of Arcadian groves. The scenery is the acme of existing beauty—poetical and elevated, but not supernatural. But granting this, need we name a Wilson, a Wright, a Gainsborough, a Morland, a Glover, a Turner, a Calcott, a Collins, a Strutt, and many, many others!

The art of picture-cleaning and repairing, the economist will leave to those who make it a profession; for though he must pay for it, yet he thereby escapes the risk of spoiling a good picture.

In regard to cleaning picture-frames, however, we may offer a novel hint, which is a short and easy method by means of soap on a soft brush, to be used very gently, then to be washed or wiped off, and the frame to be dried by placing near the fire: after this the gilding must receive its polish by a brush, dry and very soft, dipped in powder of bread charcoal. The point of economy here is to try at first upon frames of little value; as practice and a little tact are necessary.

Sculpture is too expensive for common purposes; but good casts ought not to be excluded from a complete library. In fact every man of taste must congratulate himself that in regard to sculpture, England may now be said to be not only the seat, but the refuge, of that art, in common with others; and that so many genuine remains of ancient chisels are now preserved in our cabinets. "The Genius," as Richardson says, "who hovers over these venerable reliques, may be called the father of modern art!"

We have only further to hint upon this subject, that extraordinary care ought to be taken of all antiques; for it is proved by the Arundelian marbles,

first placed in the garden of Arundel-house in the Strand, in the reign of Charles I. and afterwards removed to Oxford, that the short period of exposure to our open atmosphere has done more to injure them than their twenty centuries of exposure in the genial climate of Greece.

Those who wish to go further into this part of the subject, may consult Dallaway on the Fine Arts in England.

To enumerate all the philosophical instruments of use in a library would far exceed our plan; but we may insert two very cheap and useful substitutes for the microscope and barometer, which have been lately offered to the world.

The first, invented by Mr. Sivewright, to form single microscopes of high magnifying powers, is as follows:—Take a piece of platinum foil, and make circular holes in it from 1-20th to 1-7th of an inch in diameter, and half an inch apart; put pieces of glass into them large enough to fill the aperture. When the glass is melted by a blow-pipe, it forms a lens which adheres strongly to the metal, and is therefore set for use. An eye or loop, made of a piece of platinum wire, may also be used in place of the foil. The pieces of glass used should have no scratch of a diamond or file on them, as a mark remains after being most intensely heated. Of lenses made in this way, those larger than 1-7th of an inch were not so good as the smaller, and the best were less than 1-16th: those which contain air-bubbles must be rejected.

Mr. Sivewright has also succeeded in forming a plano-convex lens by fusion. A piece of glass was laid upon a plate of topaz, with a perfectly flat and polished natural surface, which is easily obtained by fracture, and the whole exposed to an intense

heat. The glass fused, its upper surface became spherical from the attraction of its particles, and the lower flat and highly polished from contact with the plate of topaz.

The barometer is formed of a common horse-leech, kept in a large phial covered with a piece of linen rag, three parts full of clear spring water, regularly changed twice a week, and placed in a room at a distance from the fire. In fair and frosty weather it lies motionless, and rolled up in a spiral form at the bottom of the glass; but before rain or snow, it creeps up to the top, where, if the rain will be heavy, or of some continuance, it remains a considerable time; if trifling, it quickly descends. Before rain or snow, accompanied with wind, it darts about with amazing celerity, and seldom ceases until it begins to blow hard. Previous to a storm of thunder or lightning, it is extremely agitated, and expresses its feelings in violent convulsive starts at the top or bottom of the glass. It is remarkable, that however fine and serene the weather may be, when not the least indication is given either by the sky, the barometer, or any other circumstance; if the animal ever quit the water, or move in a desultory way, so certainly will the coincident results occur in 36, 24, or perhaps 12 hours; though its motions chiefly depend on the fall and duration of the wet, and the strength of the wind, of which in many cases it has been known to give a week's warning.

To these may be added a natural hygrometer, dependent upon well-known botanical principles. For instance, the seed-vessel of the *Impatiens*, or touch-me-not, consists of five divisions; each of these, when the seed is ripe, on being touched, suddenly folds itself into a spiral form, leaps from the

stalk, and disperses the seed to a great distance by its elasticity. The capsule of the geranium, and the beard of wild oats, are twisted for a similar purpose, and dislodge their seeds on wet days, when the ground is best fitted to receive them. Hence one of these, with its adhering capsule or beard fixed on a stand, serves the purpose of an hygrometer, twisting itself more or less, according to the moisture of the air.

In the country a *Chemical Laboratory* will always be found an agreeable adjunct to a library, even though it should consist of nothing more than a blow-pipe and charcoal.

The first of these is merely a tube with one end large enough to be blown into by the mouth, and the other not larger than a very fine wire: with this the operator forces the flame of a candle upon any object which he wishes to expose to the chemical test of fire upon a small scale. The matter of experiment must be laid upon a piece of charcoal, and that upon a silver spoon.

The charcoal may always be procured; but if intended to be very pure, lay a piece of wood in a crucible, cover it with sand, and set it on a brisk fire until thoroughly burnt to a coal.

We must, however, hint to our inexperienced readers the propriety of being cautious in their experiments; in illustration of which we shall record a short anecdote of an ingenious continental chemist. By the addition of nitric acid to the solution of potash and phosphorus in alcohol, a nitrate of potash is formed, which crystallizes rapidly, and is deposited at the bottom of the liquid. When completely separated from the latter, and strongly heated, it produces the same effects as common

nitre; but if the mixture of liquid and salt be heated to desiccation, a violent explosion is the result. "Not being aware of this effect," says M. Sementini, "I evaporated to dryness about 36 grains of the salt mixed with this liquid. The detonation was so violent as to beat me to the ground, completely stunned, and I remained deaf for a whole day. Every thing brittle on the table of the laboratory was broken to shivers. Considering the small quantity of matter capable of producing such an effect, I conceive that, next to detonating silver, this substance is the most violent with which we are acquainted."

Before we close these remarks, we must draw the attention of our readers to two articles which ought to accompany every library, as great savers both in time and books. One is a well-classed catalogue, and the other is a set of tickets, or forms of acknowledgment, printed ready for the signatures of those who may wish to borrow books, leaving blanks for the name, date, and volume, in the following manner:—"Received by me this——— day of ——— the —— volume ——— from the library of ———." By this precaution a gentleman may have the pleasure of accommodating a friend with a book without fear of finding his shelves gradually thinned, through the carelessness or dishonesty of those whom he may kindly oblige. A wit observed, that all kinds of robbery and theft would be pardoned in the next world, except the stealing of a great coat, an umbrella, or a book; articles respecting which many persons who would start at the idea of fraud are, to say the least, grossly negligent, and which yet cannot be forgotten, or wilfully retained with-

out subjecting the delinquent to the charge of ingratitude, or oblivion of benefits received in a moment of emergency.

A common-place book is likewise an article belonging to the library, which ought not to be omitted, as tending to the preservation, and consequently economizing, of the information derived from the books themselves; and by adding to the extracts entered into it the date of the time, or any other circumstance connected with the making of them, an agreeable and often interesting association of ideas will be formed, whenever they may be referred to. A good index should be made of each article, so that it may be readily found when wanted; for in a work professedly on Practical Economy we cannot too often inculcate the admirable maxim of Franklin, that "lost time is lost subsistence; it is therefore lost treasure."

The bell now calls us to the

DINING-ROOM,

a circumstance of such common recurrence, that it will naturally be imagined no hints of novelty can be offered upon it. Nor is it from the *soi-disant* sage, who writes of Dinner Parties over his midnight lamp, that the fashionable world will expect much information.

As it is, however, an old observation, that Providence sends meat, but that *somebody* also sends cooks, we may be permitted to offer one short hint on that subject. Let it always be remembered, then, that cleanliness is actually an advantage in economy. Hence the cleanest and brightest dishes and plates will always keep meat the hottest.

The philosophy of this hint, for it is the fashion

now to philosophize even at dinner—in the epicurean mode at least—is simply this. If the dish or plate is colder than the meat, it will naturally absorb some of the radiant heat passing off from the smoking sirloin; but the brighter the dish, the more it reflects heat as well as light, and actually returns the radiant heat back again to the joint itself, which attracts it more powerfully than the surrounding atmosphere.

Heaven forbid that *we* should attempt to prescribe bounds to the hospitality of the table: one hint must here suffice. Let him who does not wish to diminish the number of his friends learn to diminish the number of his dishes and of his servants—the one will facilitate the other: but a little good management will do better than either. At all events, a dumb waiter will soon repay itself; but that which gives the greatest promise is a dinner-table which we have seen announced, combining in itself the various offices of sideboard, cupboard, artificial cellar, cellaret, conservatory, and dumb waiter, besides the use of hot-water plates and dish-covers, free from their uncouth appearance. Its great recommendations are, that it gives to every guest at table the full use and command of all the dishes placed upon it, without being under the slightest necessity of troubling any one in the carving department; next, that it frees both the men of opulence and of business from liability to the tattle or espionage of their attendants, which exists under the present helpless form of dining; and last, but not least, that it furnishes to the great middle class of society in this country all the elegance and convenience of a living servant in attendance during the daily busy gala hour of human life, without the concomitant inconveniences of

want of sufficient employment for him afterwards; as well as enabling them to devote the expense of maintaining one to other purposes.

We may in due time proceed to join the ladies in the

DRAWING-ROOM,

the economy of which, according to the fashionable style of crowded routs, may, with a little ingenuity, be made more conducive to *saving*, than even the old-fashioned system of *tea and turn out*, so annoying to subalterns in country-quarters; that is, agreeably to the definition given by a frugal cit of his wife's parties, so crowded, or rather crammed, or, more truly speaking, jammed into two small rooms and a closet, that although there was room to call for refreshments, there was none to hand them in!

We shall, however, propose a more beneficial saving, inasmuch as there is more health expended in sitting in or coming out of the drawing-room, than the ball-room or crowded theatre; for, in regard to the latter, custom has rendered some little care a matter of attention; but in our own, or our friend's drawing-room, we are so much *at home*, that any avoidance of draught, or precaution against exposure, is unthought of.

The first objects of consideration in our drawing-rooms, then, are their temperature and ventilation. It has indeed been judiciously observed, that if the natural state of our atmosphere be variable, and if certain parts of the surface of the earth, and even animal life itself must necessarily tend to vitiate the composition of the air, our own folly, or the imperious customs of civilized life, give tenfold force to these unavoidable enemies of our health. It is

not on the husbandman, the soldier, or the sailor, who are so much exposed to the conflicting elements, that their malignant influence principally falls. It is on the delicate female, the pale mechanic, and the sedentary artist, who add artificial to natural extremes; fly from one to the other; writhe under the effects of this imprudence, and then rail against the climate as the cause of all their miseries!

To examine the matter in a practically philosophical point of view, we may observe that, agreeably to the existing system, the temperature of our apartments is principally raised by the radiant heat from the burning materials in the fire-place, whilst in parts removed from the fire-side it is lowered by the currents of air which naturally rush in to fill up the partial vacuum caused by the rarefaction of the air near the chimney.

To cure this evil by stopping up all crevices, and making our doors and windows impervious to atmospheric air, would only be to encounter a worse one: inasmuch as the air already in the apartment would speedily be unfit for respiration; the fire itself would decline for want of draught, and the heavier external air, by its natural gravity descending the chimney, would bring all the smoke along with it, with all the annoyance of partial suffocation. A better system has, however, been proposed, by means of which the combustion of coal may be made complete, the generation of smoke prevented, and even the nuisance of ashes in the grate considerably diminished; whilst, instead of part of the company being exposed to the chilling effects of cold currents of air, a stream of warm air at any desired temperature may be introduced, or its superabundance carried off in a similar way, but in a contrary direction. The

general principles of the new system are, that the air which is destined to supply the expenditure of the apartment shall enter at the ceiling over the fire-place; but to be first warmed, in cold weather, by passing along a culvert or passage under ground, so deep that the temperature shall be higher than that of a winter atmosphere; and, when necessary, by receiving additional heat from a stove. Indeed, from the temperature of the earth, a few feet under ground, being always, or nearly so, equal to the *mean heat* of the climate, the air in winter, if the passage is long enough, will be considerably warmed even without a stove; and in like manner in the summer no artificial heat will be necessary: on the contrary, the air passing then under ground will be cooler than the atmospheric air!

Another great improvement is likely to result from the philosophical acuteness of a worthy physician, who, directing his attention to the advantage of an equal temperature in rooms occupied by persons suffering under pulmonary complaints, has invented a new apparatus for attaining that object. It consists simply of a glazed metal frame or window, fitted to the chimney-piece, and placed before the fire, so as perfectly to cut off the communication between the room and the fire-place. The fire is fed with air by a tube from without, and ventilation is effected by openings near the ceiling, either into the chimney or staircase. The inventor asserts that the benefits of this plan are, a nearly uniform temperature throughout the room, the total prevention of currents or drafts of air, the saving of fuel, the general raising of temperature in the house, and the exclusion of smoke or dust. For such blessings he thinks we might bear the

eye-sore of looking at our fires through a window, and opening a pane occasionally to admit the poker: and, in fact, it may even be made highly ornamental, independent of its additional security as a safeguard against accidents.

The next point to which we would call the attention of our fair readers, is the danger resulting from unguarded exposure on leaving a crowded or heated drawing-room. It is, and has long been the opinion of the most enlightened medical practitioners, that many lives are annually lost by the ill-judged caution of lingering about the halls and doors of heated apartments, till the body is cool, before venturing into the air. In this state it is highly susceptible of the baneful influence of the night. It would be better to issue forth, even with some perspiration on the surface, than to wait till the system is chilled.

It is indeed probable that three-fourths of the disorders to which the human constitution is liable in this climate, originate in, or are at least considerably influenced by, aerial transitions; and therefore we cannot be too much on our guard against this source of danger.

Of course we cannot, in addition to the preceding hint, enforce too strongly the necessity of guarding the organs of respiration from the direct influence of the night air, by such mufflings about the face, as may not only detain a portion of the air expired from the lungs each time, but communicate a degree of warmth to each inhalation of atmospheric air.

We may support our cautions by pointing out, agreeably to the observations of an intelligent physician, that the defence of the lungs themselves has been hitherto strangely overlooked; though it re-

quires but a moment's reflection to be convinced of the vast importance of this consideration. In the space of one minute the delicate structure of the lungs is exposed to an atmospherical transition of perhaps thirty or forty degrees—from the over-heated theatre to the freezing midnight blast! Is it not strange, he adds, that we should have been so very solicitous about heaping fold over fold on the surface of the body, while we never dreamt of the extended surface of the lungs, which we left completely exposed? Is it not still more strange that this should have been forgotten, when daily observation shewed that the lungs were the organs which, nine times out of ten, suffered by these exposures?

As the shortest and simplest remedy, we shall merely add that as the injury is particularly received through the medium of the skin and the lungs, so it is quite evident that the safeguard of the former is warm clothing, constructed of materials that are bad conductors of heat, as woollen, cotton, &c.

Indeed the skin and lungs may both be protected at the same time; as it is already well known that a not unfashionable article of dress, such as is called a *comforter*, folding loosely round the face, will receive a portion of caloric or heat from the breath at each expiration, which portion will be communicated to the current of air rushing into the lungs at each inspiration; and thus a frigid nocturnal atmosphere is, in a considerable degree, obviated.

We have already alluded to safeguards against accidental ignition of inflammable dresses, and we must again recommend most strongly the projecting wire-work fenders, which prevent the too near ap-

proach of muslin dresses. Yet, even with these fenders, sparks may produce accidents, in which cases our fair readers ought so far to have the command over their feelings as not to run after assistance, thereby increasing the danger, but to ring the bell loudly, and then to throw themselves down on the carpet until assistance comes. This precaution has already been enforced in a monthly publication, but cannot be too often inculcated upon the female mind, as well as the recommendation of having a green baize cloth laid upon a table in every drawing-room or morning parlour, in which the person, whose dress is on fire, ought to wrap herself instantly, thereby, if not extinguishing the flame, at least stopping its progress until assistance shall arrive.

SECTION III.

AUXILIARY APARTMENTS.

WARDROBE—*Care of Clothes—Restoration of Colours—Gold and Silver Lace—Boots and Shoes.* BATHS, *temporary or fixed.* CHINA CLOSET.—*Specimens of Porcelain—Hints to Collectors—Dresden, Sevres, and British China—Cleaning and Repairs.*

WARDROBE.

OF late years not only the form, but even the texture, of our apparel have been so changeable, that it has become an old-fashioned piece of economy *to take care of one's clothes;* yet, in spite of fashion, the change in the times has begun to produce a change in our opinions, and a little economy is not now considered as misplaced. With that in view, we shall venture to offer a few hints to our readers of both sexes, in regard to this branch of domestic arrangement.

As clothes, when laid up for a season, are apt to acquire an unpleasant odour, which generally requires considerable exposure to the atmospheric air before it dissipates, it will always be advantageous

to prevent it by a very simple process, which consists in depositing recently made charcoal between the folds of the garments. Even where the odour has taken place, the charcoal will absorb all the unpleasant effluvia.

To drive away or to prevent the approach of moths, there are several methods, all efficacious, which may be adopted *ad libitum*. Wrap up yellow or turpentine soap in paper, or place an open bottle containing spirits of turpentine within the wardrobe. But as the smell of the latter may be unpleasant, sprinkle bay-leaves, or wormwood, or lavender, or walnut-leaves, or rue, or black pepper in grains.

A very simple yet certain mode of removing stains from mourning dresses is, to take a good handful of fig-leaves, which must be boiled in two quarts of water until reduced to a pint. Squeeze the leaves, and put the liquor into a bottle for use. The articles, whether of bombazine, crape, cloth, &c. need only be rubbed with a sponge dipped in the liquor, when the effect will be instantly produced.

But where any reason exists to prevent the substance from being wetted, then apply French chalk or powdered talc, which will absorb the grease from the finest texture without injury, if judiciously managed.

To restore colours, boil the articles in a ley of equal parts of quick-lime and wood ashes, rinsing them out in weak alum water, and pressing them well when nearly dry; or wash them in water saturated with black soap and salt, rinsing them carefully, and pressing as before.

Gold lace is easily cleaned and restored to its original brightness, by rubbing it with a soft brush

dipped in roche alum burnt, and sifted to a very fine powder.

In dyeing faded articles of dress, the water used in the process ought to be the softest and purest; and it will be proper to boil it before mixing the dye stuffs, suffering it to cool under atmospheric exposure.

The materials, and the manner of using them, will be found in any common receipt book; but we may observe that the expressed juice of the Barberry is useful in family dyeing. The root boiled in water forms a beautiful green, if applied to glove leather. A brilliant yellow matter for dyeing has been discovered in potatoe-tops.—The mode of obtaining it is, cutting *the top when in flower*, and bruising and pressing it to extract the juice. Linen or woollen soaked in this liquor for forty-eight hours, takes a fine, solid, and permanent yellow. If afterwards plunged in a blue dye, it acquires a beautiful permanent green.

With one word to the gentlemen we shall close. For the cleaning of boot tops, receipts are multiplied far beyond our notice; but with regard to blacking, we may insert that the article sold under the name of *Italian Paste*, is made according to the following receipt: Ivory black, 4 ounces; treacle, 3 ounces; sulphuric acid, 1½ ounce; water, 4 ounces; sperm. oil, ¼ ounce; calamine stone, prepared, 8 grains; indigo, 8 grains; sal ammoniac, 8 grains; yellow resin, 1½ drachm; wax, 1 drachm. But as the sulphuric acid, unless managed very carefully, is rather an enemy to economy, perhaps a safer receipt will be found in the following:—Ivory black, ground finer than it is usually met with at the shops, 4 ounces; treacle, 4 ounces; vinegar, three quarters of a pint; sperma-

ceti oil, 2 drachms: these will cost about sevenpence halfpenny, and will make a pint.

A patent has been obtained for a new method of making blacking, by which a higher polish is given, and the leather better preserved, than by any hitherto known. To make 40 gallons of blacking take 40 gallons of vinegar (known by the number 18), 90lbs. of ivory black, 5 gallons (wine measure) of sweet oil, 28lbs. moist sugar, 18lbs. of oil of vitriol, and 26 ounces of gum arabic. Procure a tub with a thin strainer full of small holes fixed under its lid, which should likewise have a hole large enough to permit liquid ingredients to be poured through it by means of a funnel or otherwise. Into this tub put the ivory-black, sugar, sweet oil, and four gallons of vinegar, and mix them into a thin paste; then pour half the oil of vitriol through the lid and strainer, and after the mixture has stood about ten minutes, add in the same way about two gallons more vinegar. Take off the lid and gradually pour in the remainder of the vinegar, at the same time keeping the whole constantly stirred. This done, pour the remainder of the oil of vitriol through the strainer, put the mixture into a copper, and throw in the gum arabic: as soon as it begins to boil, draw it off, and when cold it is fit to be bottled, but while bottling it should be continually stirred.

From the care of clothing we may naturally proceed to that of the person, in the consideration of which the first great object is the

BATH.

If to preserve health be to save medical expenses, without even reckoning upon time and comfort,

there is no part of the household arrangement so important to the domestic economist as cheap convenience for personal ablution.

Though temporary or tin baths may be extremely useful upon occasion, it will be found to be finally as cheap, and much more convenient, to have a permanent bath constructed, which may be done in any dwelling-house of moderate size without interfering with other general purposes. It is unnecessary, the public having very recently been presented with an excellent popular work on the general subject,* to notice the salubrious effects resulting from the bath, beyond the two points of its being so conducive both to health and cleanliness, in keeping up a free circulation of the blood without any violent muscular exertion, thereby really affording a saving of strength, and producing its effects without any expense either to the body or to the purse.

It will also be proper to place the bath as near the kitchen fire as possible, because from thence it may be heated, or at least have its temperature preserved by means of hot air through tubes, or by steam prepared by the culinary fire-place, without interfering with its ordinary uses. Where cicumstances do not permit these arrangements, a small boiler may be erected at very trifling expense in the bath-room.

But when a bath is to be built either in a house whilst erecting, or outside of one already erected, it will be found cheapest to form it of bricks, shaping the ceiling into a dome, or segment of a sphere. The entrance also ought not to be in the side wall,

* See Essay on Bathing, by Sir Arthur Clarke.

like a common apartment, but rather through an aperture in the top, with a descending staircase in the body of the bath room.

Whenever a bath is wanted at a short warning, to boil the water necessary will always be the shortest mode; but where it is in general daily use, the heating the water by steam will be found the cheapest and most convenient method. As a guide for practice, we may observe it has been proved by experiment, that a bath with five feet water at the freezing point may be raised to the temperature of blood heat, or 96 degrees, by 304 gallons of water turned into steam at an expense of 50lbs. of Newcastle coal; but if the door be kept closed, it will not lose above four degrees of temperature in twenty-four hours, by a daily supply of 3lb. of coal. This is upon a scale of a bath of 5000 gallons of water.

Another auxiliary apartment, which cannot fail to be interesting to our fair readers, is the

CHINA CLOSET,

whether we refer to it as for mere domestic use, or for the gratification of a taste elegant and harmless, if kept within proper bounds.

The passion for collecting China-ware, and indeed all things of Japanese manufacture, is by no means so prevalent as it was some years ago, when the New Exchange, now Exeter 'Change, was the grand mart for dragons, bonzes, nodding mandarines, vases, fans, tea, and its accompaniments—scandal, and intrigue also, if our comic writers of the last age are to be credited.

Yet, though no longer the rage, the taste for collecting handsome or antique specimens of foreign and also of domestic China-ware, is neither inelegant nor useless, if adopted as an amusement, and not permitted to become expensive.

It must be confessed that the modern porcelain is much more beautiful than the ancient, but then it wants the value of the antique, which, of course, implies a certain degree of scarcity; in consequence of which, although nearly all the modern colours, to say nothing of the form and shape and of the outline and pencilling, are much superior to any thing that the China or Japan markets afford, yet a considerable portion of modern ingenuity has been turned from the legitimate walks of manufacture, not indeed to *imitation*, which would be praiseworthy, but to *counterfeiting* the antique China—a species of robbery as morally reprehensible as forging a bank-note, though not of such important detriment to society.

To investigate the principles of *Collecting* will then be to redeem our pledge of pointing out the means of saving money even in elegant superfluities, which may be enjoyed at no greater probable expense than the interest of the money laid out, the property still retaining its fee simple value, should a change of inclination consign it to the hammer.

The absolute perfections of the old China porcelain consisted in its whiteness, transparency, and fineness of texture; in the elegance of its patterns, neatness of its execution, brilliancy of its colours and gilding, and the magnificence of its form and size. In all these points, however, the Japanese was then, and is still, considered as the most perfect, even in China.

The very oldest Chinese porcelain is a pure white, without any colour whatever, sometimes with figures raised in relief. The earliest colour laid on was the blue, and the oldest and finest was the rich deep blue, so much admired, but now so badly imitated even by the Chinese themselves.

The next point of antiquity is the black porcelain, of which many specimens, especially when ornamented with gilding, are considered as more beautiful than the more antique manufacture.

The crackled or marbled China-ware is of more recent date; and so is that called the "Egg and Spinach;" both of which may be easily counterfeited. These latter have no otherwise distinguishing points; but connoisseurs, on taking up the white or blue, always know where to look for the dolphin or dragon marks. There is another species of the real China-ware, more curious than beautiful, but valuable from its comparative rarity, as the secret is now lost, nothing further being known than the mode of laying on the colours in various layers on the inside. This species of China is ornamented with various figures, but principally fishes, and its peculiarity is, that the figures do not appear until the vessel is filled with water.

Foreign China-ware, or porcelain of modern manufacture, may be divided into the Saxon or Dresden, the French or that of Sevres, and that made at Vienna. These display a most beautiful white, a shining transparency, a fine glazing, exquisite gilding, with elegance and regularity of form; but, if we leave the point of manufacture out of the question, we have not enumerated a single quality in which they may not be equalled at home; with this remarkable distinction, that the

foreign porcelain is all the produce of Royal manufactories, where expense is the last thing thought of, whilst our British manufacture is all the produce of private capital, private industry, and private speculation.

The best material for cleaning either porcelain or glass-ware, is Fullers' earth, but it must be beaten into a fine powder, and carefully cleared from all rough or hard particles, which might endanger the polish of the brilliant surface.

In cleaning porcelain it must also be observed, that some species require more care and attention than others, as every person must have observed that China-ware in common use frequently loses some of its colours. The red, especially of vermillion, is the first to go, because that colour, together with some others, is laid on by the Chinese after burning. The modern Chinese porcelain is not, indeed, so susceptible of this rubbing or wearing off, as vegetable reds are now used by them instead of the mineral colour. Much of the red now used in China is actually produced by the *anatto* extracted from the cuttings of scarlet cloth, which have long formed an article of exportation to Canton.

It ought to be taken for granted that all China or glass-ware is well tempered; yet a little careful attention may not be misplaced, even on that point: for though ornamental China or glass ware is not exposed to the action of hot water in common domestic use, yet they may be injudiciously immersed in it for the purpose of cleaning; and, as articles intended solely for ornament may not be so highly annealed as others, without any fraudulent negligence on the part of the manufacturer, it

will be proper never to apply water to them beyond a tepid temperature.

But when fractures take place, the best cement, both for strength and invisibility, is that made from mastic. The process, indeed, may be thought tedious; but a sufficient quantity can be made at once to last a life-time. To an ounce of mastic add as much highly rectified spirits of wine as will dissolve it. Soak an ounce of isinglass in water until quite soft, then dissolve it in pure rum or brandy, until it forms a strong glue, to which add about a quarter of an ounce of gum ammoniac, well rubbed and mixed. Put the two mixtures together in an earthen vessel over a gentle heat; when well united the mixture may be put into a phial and kept well stopped.

When wanted for use the bottle must be set in warm water; when the china or glass articles must be also warmed and the cement applied. It will be proper that the broken surfaces, when carefully fitted, shall be kept in close contact for twelve hours at least, until the cement is fully set; after which the fracture will be found as secure as any part of the vessel, and scarcely perceptible. It may be applied successfully to marbles, and even to metals.

When not provided with this cement, and in a hurry, the white of an egg well beaten with quicklime, and a small quantity of very old cheese, form an excellent substitute, either for broken China or old ornamental glass ware.

It is also a fact well ascertained, that the expressed juice of garlic is an everlasting cement, leaving no mark of fracture if neatly done.

These are fully sufficient for every useful pur-

pose; but we may still further observe, in respect to the cement of quick-lime, that it may be improved, if, instead of cheese, we substitute the whey produced by boiling milk and vinegar, separating the curd carefully, and beating up with half a pint of it, the whites of six eggs, adding the sifted quick-lime until it forms a thick paste, which resists both fire and water.

SECTION IV.

DOMESTIC OFFICES.

KITCHEN—*Culinary Heat—Water—Furniture—Boiling and Stewing.* LARDER—*Air—Temperature—Preservation of Meat.* DAIRY—*Form and Cleanliness—Vessels—Choice of Cattle—Feeding—Butter—Cheese.* BAKERY—*Flour Adulteration—Ovens—Yeast.* LAUNDRY—*Materials—Best Process—Bleaching—Stains and Moulds—Linen.* CONFECTIONARY—*General Economy—Fruits—Preserves—Odours—Flavour—Temperature.* STILL-ROOM—ICE-HOUSE.

KITCHEN.

IF all books of cookery were treatises on economy, our labours in this department would be short indeed; but even now we shall not trespass far upon the secrets of these Plutonian regions, whose Empress will bear no rival near her throne. The three-headed dog who guarded the poetic hell might be entitled, *ex-officio*, to a sop; but the unlucky, critical dog, who should dare to enter this modern

Hades in hopes of a sop in the pan, might chance to have his head broken, had he as many as Cerberus himself. The "secrets of this prison-house," then, we shall not dare unfold; but proceed to notice some improvements which may be judiciously adopted, even in addition to the convenient arrangements of the Rumford plans, which have already, in a considerable degree, superseded the use of the immense long ranges, that burned as much fuel in one day as might suffice for a week. Of the extraordinary quantity of caloric, or of radiant heat emitted from these long ranges, it is almost impossible to account for the consumption, except in the belief that a great portion was wasted, beyond what was absorbed by the dressed meat and by the cook; of which wasted portion, some went up the chimney, whilst the remainder united with the surrounding air.

To remedy this, much was done by Rumford: but further philosophic principles have been elicited, and applied to practice, by means of which a kitchen may be fitted so as to require less labour and attention; rendering the food more wholesome and agreeable, and preventing the offensive smell which makes a kitchen, on the old construction, so great a domestic nuisance even whilst it is most useful.

Many beneficial effects were produced on the Rumford plan by means of hot steam; but the new principle is founded upon the application of *hot air*, requiring so little alteration as scarcely to be called a new arrangement. It consists solely of a stone hearth, a small fire-place on the Rumford plan, and a roaster for large dishes; serving also for an oven, together with a steaming apparatus.

The roaster is also supplied with a current of

warm air, sufficient to have a great effect on the substances to be baked or roasted; contributing to the formation of that crusty brown so generally liked in roast meats, and removing completely that disagreeable smell which meat is apt to acquire in a common oven.

Where very small birds are to be roasted, an ingenious cook may avail herself of an old custom, practised on the Continent on the eve of the Epiphany, which is, to take a few larks and spit them on a fresh cut twig of hazel, and place them before a good fire—after a few minutes expectation, the whole begins to turn without help, as if by a spontaneous motion. The company cry out "a miracle—a miracle;" but the fact is, that the particles of sap in the veins of the twig (which are set in a spiral line round the centre), being successively attracted by the fire, cause a rotatory motion.

In a fire-place of the above construction the steaming apparatus occupies a recess in the wall, similar to that used for the common stew-hearth; and the vessels, which hold the substances to be steamed, are generally of tin, perforated with holes like a cullender, in order to admit the stream of hot air freely on every side.

This arrangement may also be made to supply the scullery at all times with warm water, heated by the surplus steam from the fire-place.

That fitting up a kitchen on these principles will be expensive in the first instance, cannot be denied; but the saving, particularly in a large establishment, will amply repay it in a year or two. The saving in coals will be considerable; and we must not forget the saving in cooks, and in all broils but those intended for alimentary refection.

An important article in kitchen economy is the

use of *good water*—not merely water good in general, but water which is specially adapted for culinary purposes. This is a circumstance little attended to, except in one or two points of cooking; but it has been shewn by a modern ingenious chemist, that the effects of different kinds of water are not only obvious to the eye, but important in their results. It is not in the solitary case of dry or ripe peas, one of the first axioms or passing questions in cookery, which cannot readily be boiled soft in hard water (a fact with which cooks are as contented as cooks can be, without examining into the philosophic principle of hard water being loaded with earthy salts, and therefore unfitted to dissolve the farina completely), but in almost every other case of culinary preparation; as it is well ascertained that good, pure, or soft water is best fitted to soften the fibres of animal matter as well as vegetable.

It must be admitted that hard water gives a better colour to green esculent vegetables, than soft water produces; but if the proof of the vegetables, like the pudding, lies in the eating, then soft water will be preferred. The indefatigable chemist, already alluded to, has shewn by an experiment with tea leaves, that soft water will extract a much greater quantity both of the tannin matter and of gallic acid from the leaves, than hard water can produce; but there are other criterions, the simplest of which is to compare two specimens of water by washing our hands in them with soap, when the very touch will be indicative of the quality. To the sight also, the difference in quality will generally be obvious, as good water is beautifully transparent, whilst the hard is tinged with a slight opacity. This, however, will not always shew itself, if the water is looked at in a glass transversely; but will be evi-

dent if the sight is directed perpendicularly into a deep glass vessel, as already noticed.

Good water has neither taste nor odour; and the best water, always containing the greatest quantity of carbonic acid gas, in addition to its proportion of atmospheric air, will always give out the greatest number of air-bubbles when poured alternately into different vessels.

It is true, that even the worst water will lose some of its aeriform fluids in boiling, which renders that operation proper for water intended for drinking, but then we must remember, that good water also loses its air and carbonic acid, and has a vapid and insipid taste until exposure to the atmosphere restores them. Whenever water therefore is boiled previous to use, it will be necessary to set it to cool in large open vessels; and more convenient to allow it to filter slowly into a recipient vessel placed at some distance below, whilst a current of air passes freely around it. Upon this principle depends the action of the thunder-pump, so called ludicrously by the seamen, and in use on board his Majesty's ships, and also East Indiamen, to prepare the water for daily use. This instrument resembles a Dutch oven, but is rather larger. It is made of tin, with four or five shelves, fitted with ledges, and perforated with a number of small holes; but the bottom is entire, with the exception of one hole about two inches diameter in the centre, admitting a tin tube or pump which passes through the whole machine, fitted closely in the shelves, but leaving a passage for the water, which falls on the bottom to return into the cask through the lengthened tube, which passes downwards into the bung-hole or scuttle. By the action of the pump the water is brought up to the first shelf, through the holes in

which it passes to the second; then to the third, and fourth; when it is received on the bottom of the machine, and returns to the cask. Whilst this operation is performing, the open face of the machine is turned towards the wind, so that the air comes in contact with every *drop* of water. Its action was formerly supposed to be to deprive the water of something deleterious, acquired by long keeping, but is now known to consist in restoring to the water that which it had actually lost.

A very cheap and easy mode of filtration may be adopted, where no regular machine can readily be had. Place two or three ounces of ivory-black (which is the charcoal of bones) between some folds of cotton or muslin; inclose this in a small box of tin-plate, shaped like a round snuff-box, and of which the top and bottom are pierced with numerous small holes. The thickness of this box may be an inch or less. It is to be placed at the bottom of any vessel of wood or stone ware, to which this sieve can be made to correspond. The water contained in the vessel will drop through free from all dust, impurities, smell or disagreeable taint. The charcoal will not require to be renewed oftener than once in six months.

Our fair readers, who amuse themselves with keeping gold and silver fishes in glass vases, will learn from this *not* to boil the water with which they are supplied; as fish will not live in water deprived of its atmospheric air: on the same principle, the covers of the vases ought to be open catgut, and not muslin. In the metropolis, the Thames water will be found better for this purpose than that of the New River, as it contains a larger quantity of atmospheric air. In the country, rain-water

will be best for this purpose; but in London it is too strongly impregnated with foreign substances.

So much has been said on the subject of culinary vessels, that we have little novel to offer In all cases, but particularly in regard to copper utensils, the utmost cleanliness is necessary. Some cooks may imagine, in the ardour of philosophical research and of chemical experiment, that where no acids are brought in contact with the copper, no danger of oxyde or verdigrease can arise; but in the kitchen, as well as at college, "a little learning is a dangerous thing;" and they must be taught that even the action of air and moisture will oxyde copper, though not so readily as vinegar or lime-juice. No food of any kind ought therefore to be suffered to remain in the copper kettles or stew-pans, longer than during the process of cooking; whilst even the best tinned ought to be sedulously cleaned and dried after every time of using. It would be a great improvement in the tinning of culinary ware, if that operation were performed upon the copper-plates previous to their being formed into utensils, as is the case with iron plates for the common tin ware.

It is supposed that even in copper, whilst it is on the fire, and its contents in a boiling state, no verdigrease is produced even by the strongest acids; the danger arising from the oxyde which forms by the action of acids when cold, or of the air afterwards. This supposition, however, if true, can only apply to liquids in a state of active ebullition, but must not be considered as relevant to liquids simmered in a stew-pan over a charcoal fire. With respect to charcoal itself, let us caution cooks against its use in any quantity, except where there

is a free current of air: for charcoal is highly deleterious in a state of ignition, although it may be rendered even actively beneficial when boiled; as a small quantity of it, if boiled with meat on the turn, will effectually cure the unpleasant taint. This is a hint which may be useful in cooking both hare and venison, where the tenderness of fibre, acquired by long keeping, may be wished for without its *haut goût*.

It may be useful for the economical housewife, to know that beef loses about one pound in four in boiling; but in roasting, loses in the proportion of one pound five ounces; and in baking about two ounces less, or one pound three ounces. Mutton loses, in boiling, about fourteen ounces in four pounds; in roasting, one pound six ounces. In calculating for a family, large or small, one pound per day for each individual is a very fair allowance, both for dinner and supper; and will, in general, be found more than sufficient, under due care, especially where vegetables, pies, or puddings are in daily use.

These are grand secrets in culinary free-masonry; but the arch secret, or arcanum, seems to have been discovered by Count Rumford, who says that meat is to be saved by the expenditure of time, instead of the usual mode of saving time by a hasty disposal of the meat, or "bolting," as it is elegantly phrased by the bacon gorgers of Hampshire. That indefatigable economist observes, that a scanty dinner is a matter of no moment, provided that we can prolong the time of consuming and masticating such short allowance as may be set before us; so that the glutton or gourmand may rise perfectly satisfied from table, if we can only contrive to employ him as long upon two ounces of

tasty food, as he would have been in dispatching a couple of pounds of venison or turtle in the common way.

For this purpose an Hibernian economist might recommend the toughest mutton, or a little of that which sometimes in the metropolis is called *Lamb*, from its size, though in age it may be equal to that of its oldest brethren on the Welsh mountains, from whence it emigrated some years ago into Lincolnshire; or the Trans-tweedian housewife might perhaps set down her "Kebbuck" of cheese, equal to that of our *Suffolk* dairy. But Rumford's plan, which he says he saw practised with success by the Hessian soldiery, is first to make *tasty* soup of a few ounces of meat, then to put in toasted bread, soaked in butter and fried, so that it remains hard in the mouth, the oily coat and its artificial solidity having neutralized all chemical affinity with the soup in which it is floating.

It is true that some persons with *good* teeth, and others with *bad* ones, may object to this species of kitchen discipline; but it is evident that its effect must be to prolong the social hours of dinner, provided the guests can be persuaded to stop and perform the necessary mastication; yet, after all, we might perhaps as well have recourse to the old recipe, which informs us that four and twenty pounds of bone, boiled in four and twenty gallons of water, for four and twenty hours, will make four and twenty quarts of soup for four and twenty Frenchmen!

Whilst we are talking of bones, it must not be forgotten that they may now be eaten as readily as the tenderest steak or veal cutlet, by the new philosophic mode of preparing first jelly, and then gelatine.

According to this new principle—for we wish not to treat it as a mere matter for laughter—the old mode of preparing jelly may be much improved, and with a considerable saving, by the use of bones only. It is true, indeed, that bones have long been employed for that purpose by the London confectioners, but not on so economical a principle as that which we shall now detail; wherein the bones intended for broth or jelly require little or no selection; the more veal bones there are among them, the more readily the broth assumes the form of a jelly, but it is not on that account better, or more nutritious. The only preparation requisite is to break them with a hammer into pieces three or four inches long. The boiler employed is of the common kind, well tinned, or at least kept very clean, and placed upon a Rumford furnace, which exceedingly facilitates the graduation of the fire, and produces a great saving in fuel. The boiler must be provided with a lid, having a vent for the escape of the steam; but the heat should not be raised beyond the ordinary temperature of ebullition, and when that is attained, only a gentle fire should be kept up, otherwise it is liable to spoil the jelly. Put into the boiler as much water as it will conveniently hold, with one-sixth of its weight of broken bones. When it boils, skim and put on the lid, which is occasionally removed for the purpose of stirring the bones with a large stick or wooden shovel. When any quantity of fat is seen floating on the surface, take it off with a flat ladle, lest it should be spoiled by long ebullition. This fat, which soon congeals, is one of the alimentary products, and may either be kept by itself for culinary use,

or put again into the jelly just previous to its being taken off the stove.

The process may be repeated thrice with the same bones, which will each time furnish about the same quantity of broth or jelly as at first; for water cannot dissolve more than a certain proportion of extractive matter, and when this liquid is once saturated, it must be renewed, if the extraction go on. Thus one pound of bones will yield, at four successive boilings of three or four hours each, four pounds of jelly, containing as much nutritive matter as the broth usually made with six pounds of meat.

After the jelly has thus been extracted, and when a casual observer might suppose that nothing but a caput mortuum was left, the second process begins, of boiling the bones in sal ammoniac, and then laying them up for use; to which they are put by grinding or breaking, and boiled down, until, as it has actually been ascertained by experiment, one hundred pounds of bones, principally beef, yield twenty-five pounds of dry gelatine, the nutritive quality of which, compared with meat, may be thus estimated. Experience proves that one pound of meat will make two of broth. From the analysis published at Munich, it appears that one hundred pounds of beef contain seventy-four of water, six of dry gelatine, and twenty of dry fibre, which serves only to fill the stomach, and not for aliment; so that the 6 *per cent.* of dry gelatine may be considered as the only parts that are nutritive. The published Instructions add, that eight ounces of beef per day are sufficient for the ordinary nourishment of a man; these eight ounces of meat are scarcely equivalent to half an ounce of dry

gelatine. Double the quantity of meat, that is to say, take a pound to make broth for a good ration of soup, and one ounce of dry gelatine will produce the same effect.

The dry gelatine is perfectly insipid, and does not dissolve very easily in water. When wanted for use, it is to be soaked overnight in water in a warm place. Being then set over a slow fire for four or five hours, it is wholly converted into a nutritious but insipid broth, with which the seasoning and vegetables intended for the soup may be mixed. To give it the flavour of the meat which it has lost, instead of four ounces of gelatine take three; add a pound of meat, and sixteen pounds of water. Boil it down to one half, and you will have eight pounds of broth, like that made with meat only, and half a pound of *bouilli*.

Where broth is wanted in a hurry, it is found that these cakes broken and thrown into boiling water dissolve very speedily. One pound of them will furnish forty pounds of excellent broth; and one ounce of the same, dissolved in twenty ounces of water, furnishes a jelly for table, which may be seasoned to the palate.

With these cakes of gelatine, sugar, and orange-flower-water, the apothecaries make a compound for coughs, of a very agreeable taste, and extremely nutritious.

Gelatine in cakes may be used with advantage as a substitute for isinglass (which is much dearer) in all its applications.

The dry gelatine is sold at Geneva at the rate of 4 francs (3*s.* 4*d.*), and in cakes at 6 francs 50 centimes (5*s.* 5*d.*) per pound of 18 ounces.

To people accustomed to eat their dinners in the

ordinary way, it would seem that a man would never get fat upon the produce of dried bones; but we must remember that the Highland shepherds, who are some of the finest men in the world, live on scarcely any thing more than oatmeal soaked in water, and their dogs often feed out of the same dish.

It is true, indeed, that such food may require something more tasty to give an after relish, for which the ingenious Count is fully prepared, especially by a mode rendering salt fish perfectly delicious, by keeping it for several hours in water just scalding hot, but not boiling. This certainly will be more agreeable to an English palate than the Swedish relish of raw salmon cut into slices, salted, and left for some days in a wooden tray with a little water.

With some observations on the boiling of vegetables we shall close this section, premising that where the fair economist has the vegetables from her own garden, they should never be cut until wanted; that the different kinds should be kept apart, as a very small quantity of leeks or celery will very soon impart their flavour to more delicate species; and that, although the watering of cut vegetables is generally useful, it ought never to be done till just before boiling. We have seen it asserted by a French writer, who seems very anxious to carry all his philosophy into the kitchen, that the hardest and most "unboilable" produce of the garden may be brought speedily into an edible state, by the addition of a small quantity of purified alkali to the boiling water. He tells a whimsical story of a lady who was in that way in which "ladies wish to be who love their lords,"

and who, paying a country visit near Paris, longed for an immense cabbage, which she saw in the garden standing for seed. Whether she was a tailor's wife, or not, he does not inform us; but she was in a hurry, and under the usual plea in such cases, not only insisted on having the cabbage, but on having it in half an hour. In vain did the unfortunate cook declare that it was impossible—she asserted, that to a *good* cook nothing was impossible. His honour was touched—his glory was at stake—and Monsieur, pulling up the cabbage and pulling off his ruffles, began "*faire l'impossible.*" Fortunately for the honour of his art, as the poor cook knew nothing of philosophy, our author stepped in to dine, and was informed of the circumstance; when, slipping into the kitchen, he unseen deposited a small quantity of purified alkali in the cabbage-kettle, and to the surprise of all but the conjuror himself, the cabbage was served up within the half-hour, and the so much feared *mark* avoided. It had been well if the family cooks of many of the present great men in Paris could have boiled their mushrooms as speedily!

And now we must beg leave to remark, that as a nation we are very deficient in the practice of economy, as far as our culinary operations are concerned. A French family would live well on what is wasted in an English kitchen. The bones, drippings, pot-liquor, remains of fish, vegetables, &c. which are too often consigned to the grease-pot, or the dust-heap, might, by a very trifling degree of management on the part of a cook, or mistress of a family, be converted into sources of daily support and comfort, at least to some poor pensioner or other, at an expense that even the miser could scarcely grudge.

It would be of little avail to offer directions for culinary practice, if strict attention were not to be paid to the

LARDER,

a department in which the eye of a careful housewife will always find employment.

It is needless to say that the greatest cleanliness is necessary; but it is proper to remark that a thorough current of air ought always to be kept up; and if the situation of the larder will not admit of opposite windows, then a current of air must be admitted by means of a flue from the outside. Shelter from the sun is expedient, and as equal a temperature ought to be obtained as possible. Though joints of meat ought, in general, to be exposed to this current of air, and game also, yet fowls may be rendered peculiarly tender by a shorter process than mere atmospheric exposure: which is to lay them, as soon as killed, in a heap of wheat, when they will become tender and palatable in a couple of days.

It is to be lamented that in the metropolis poultry seldom finds its way to the economic larder; but it will be found to afford a cheap change of diet whenever the town is *empty*, as it is called, and also during the game season.

With respect to game, observe that when the weather is very warm, it will always have a good effect to put a stopper of charcoal in the vent, tying at the same time a string tightly round the neck. The beneficial effects of charcoal in stopping putrefaction, are now well ascertained; nay, even fish or meat may be restored by boiling charcoal with them. It is not irrelevant to notice here that meat, tainted to an extreme degree, has been speedily

restored by washing in cold water, and afterwards in strong camomile tea, after which it may be sprinkled with salt, and used the day following; or, if steeped and well washed in beer, it will make pure and sweet soup, even after being fly-blown.

Many other hints might be offered, but they are rather subjects for works professionally on cookery: we proceed, therefore, to record all the recent useful applications of philosophical principles to facts connected with the preservation of articles of food.

An ingenious German professor has made many successful experiments with pyroligneous acid, as a means of preventing the corruption of animal substances. He has entirely recovered several anatomical preparations from incipient corruption, by pouring this acid over them. With the oil produced from wood by distillation in the dry manner, he has moistened pieces of flesh already advanced in decay; and notwithstanding the heat of the weather, soon made them as dry and firm as flesh can be rendered by being smoked in the smoking-room. All traces of corruption vanish at once, when the vinegar of wood or oil of wood is applied to the meat with a brush.

This explains why meat, merely dried in a stove, does not keep, while that which is smoked becomes unalterable. We have here also an explanation of the theory of hams; of the beef of Hamburg; of smoked tongues, sausages, red herrings, and of wood smoked to preserve it from worms, &c.

It is sufficient to plunge meat for a few moments into this acid, even slightly empyreumatic, to preserve it as long as you desire. Cutlets, kidneys, liver, and rabbits, may be prepared and kept as fresh as if just procured from the market.

Another foreign chemist has recently made some

curious experiments on the preservation of flesh in the gases. Into a receiver of the capacity of three cubic inches, filled with very pure sulphurous acid gas, he introduced, through mercury, a piece of fresh beef: in a few minutes it had absorbed almost all the gas, and the mercury filled the capacity of the receiver, except some air bubbles, probably owing to the atmospheric air. The flesh soon lost its natural red colour, and assumed that of boiled meat: it underwent no other apparent alteration, and the air in the bell-glass preserved its volume. At the end of seventy-six days, during which time the temperature had varied from 0 to 10° Reaumer, the beef had acquired scarcely any smell of sulphurous acid, and was harder and drier than roasted meat. After being left four days in the open air, it became more compact without being putrified, and did not change colour: it merely lost the weak smell of acid, without acquiring any other. A piece of ox-beef was treated in the same way in the fluoric acid gas, and the results were in every respect similar: the phenomena were only less visible, because the acid attacked the glass, and a thin coating of mercury was deposited on the flesh.

These experiments are, indeed, fitter for the laboratory than for the larder; but the pyroligneous acid may be successfully applied by those who have no knowledge of practical chemistry, beyond the boiling of salt brine. It is also easy not only to check, but to cure putrefaction in tainted, salt, or dried meats, by simple washing with a brush dipped in the acid.

An ingenious Spaniard has discovered that meat may be preserved fresh for many months, by keeping it immersed in molasses.

A plan has recently been patented for methods or processes of preserving such animal and vegetable substances, separately or mixed together, as are adapted for the food of man, and for such a length of time as to render them fit for ship or garrison stores.

As the principles of the plan are easily applicable in many points to domestic economy, even upon a small scale, we shall enter upon it at some length; first premising that the object of the invention is effected by cutting off all communication between the atmosphere and the articles to be preserved, by one or other of the following means:—by pouring into the vessel in which the pieces of food to be preserved are packed, melted and hot fat, or pouring in a strong hot animal fluid jelly, in such a manner that not only all the interstices beween the pieces, but the whole interior of the vessel, shall be so completely filled as to displace entirely all the atmospheric air; or, secondly, by coating the different pieces with melted suet, before they are packed in the vessel in which they are to be preserved; then packing them when cold, and afterwards displacing all the air between the pieces, and from the whole interior of the vessel; by pouring in cold, a saturated aqueous solution of common sea-salt, or mineral culinary salt, that is to say, a solution of muriate of soda; or thirdly, when the article is such as to permit it (as for example butter), by filling the vessel so completely with the article itself, as to expel the air, using due precautions to prevent the access of air afterwards, by percolation, or otherwise, through the substance of the vessel. The vessels employed are adapted to the nature of the article, the manner of preservation, and the quantity to be contained in them.

For quantities not exceeding fifteen pounds the patentee employs vessels of tinned iron, either square, cylindrical, or of any other convenient form; also of earthenware, glass, or even wood. These vessels he prepares in one or more of the following ways:—1. By applying in a hot state all over their outside, and that of their covers, some good varnish or resinous substance. 2. By saturating them as much as the nature of the material will admit, and as completely as possible from their inside, with a saturated aqueous solution of common salt.—3. By lining them with a coating of any substance or mixture not deleterious or injurious (as suet or wax, or a mixture of them), that can prevent the articles put in from coming in contact with the vessels or their covers.—4. By inclosing the vessels within other vessels or boxes, leaving a little space between them to be filled up with tallow or wax, or any other substance capable of excluding the contact of the atmosphere from their sides and bottoms. Their covers are to be coated in like manner. If the vessels are of metal or earthenware, use the first and third, or the third and fourth means; if of glass the fourth; if of wood the first and second, or the second and fourth, or the third and fourth, having previously charred the inside of the vessel.

The articles to be preserved are cooked in any of the usual ways, put hot into the vessel, which is then filled with melted fat or fluid jelly so strong as to be solid when cold. The cover is then put on and soldered air-tight, after which it is to be filled completely through a hole left in the cover for that purpose. The last operation is to stop this hole with a cork, over which rosin or tallow is melted, and a tinned iron cover fitted over that.

When meat is to be preserved cooked, separate pieces of three to six pounds weight are placed in a mould while hot, and surrounded with melted suet. When cold the entire mass is taken out of the mould, and any number of these pieces may then be placed in one sound case or vessel made of wood, to contain from 18 to 50 or 100lbs. or more.

It is evident that all the varieties in this specification depend, in a great measure, upon the same principle as that which directs the covering of potted meats with mutton-suet, boiled down to fluidity; but, nevertheless, the variations in practice may be found strictly applicable to the use of the larder.

We shall now conclude with one point of very important consideration, both in regard to public and private economy, dependent upon a process for curing herrings, pilchards, mackarel, sprats, &c. which may become of extensive utility, by preserving large quantities of these various kinds of fish for food, which might otherwise be wasted in very abundant seasons. This is sufficiently evident from the fact, that, in January, 1814, sprats pickled by this method were selling to the poor of Spitalfields at the rate of one penny per pound. In the same year upwards of 25,000 mackarel, 300 barrels of herrings, and 50 of sprats, were cured at Ramsgate by this process, which is as follows:—Reservoirs of any size, vats, or casks, perfectly water-tight, should be about half filled with brine, made by dissolving about twenty-eight parts of solid salt in 75 of fresh water. The fish, as fresh as possible, gutted or not, must be plunged into this fully saturated brine in such quantity as nearly to fill the reservoir, and, after remaining quite immersed for five or six days, they will be fit

to be packed as usual with large grained solid salt, and exported to the hottest climates. As brine is always weakest at the upper part, in order to keep it of an uniform saturation, a wooden lattice-work frame, of such size as to be easily let into the inside of the reservoir, is sunk an inch or two under the surface of the brine, for the purpose of suspending upon it lumps of one or two pounds, or larger, of solid salt, which effectually saturate whatever moisture may exude from the fish; and thus the brine will be continued of the utmost strength so long as any part of the salt remains undissolved. The solidity of the lumps admits of their being applied several times, or whenever the reservoirs are replenished with fish; and the brine, although repeatedly used, does not putrify; nor do the fish, if kept under the surface, ever become rancid.

One other point of some importance connected with this process is, that all provisions are best preserved by this method, especially bacon, which, when thus cured, is not so liable to become rusty, as when done by the usual method of rubbing with salt, and is nevertheless effectually cured.

It were to be wished that fish should become a more general article of food, even in the humbler walks of life. At present the uncertainty of supply of various kinds of fish in the London market, produces such high prices sometimes, even for the commonest species, that many people are afraid or ashamed to ask the prices of what may be exposed to view at the fishmongers. To remedy this, the various articles ought to be ticketed, like those in the haberdashery shops, or a list of prices might be hung up in a convenient place for inspection.

But, above all, a second fish-market ought to be established for the West end of the metropolis.

As there is no part of rural economy more compatible with elegance, and even with modern refinement, than the

DAIRY,

so may it be found perfectly consistent, even with affluence, to render the ornamental dairy subservient to utility and economy.

It must be pleasing to show to one's friends, not only the elegance of the dairy itself, but also its agreeable produce; not in the common routine of mere milk and cream, but in their more artificial combinations.

We wish also most particularly to point out to families inclined to economize fairly, carefully, and judiciously at home, by means of a little exertion, that attention to the management and produce of the dairy-farm is a most important component part of their system.

The dairy ought to be erected in a situation remote from dirt or dust, with an aspect open to the north if possible, in which direction it ought to have one window, with another to the south. By this means its atmospheric temperature may, in some measure, be regulated in the different seasons; but it will be proper that the windows when open, and indeed the lattices generally, should only be pervious to air and light. Glass may certainly be used, but gauze, or oiled paper, within the lattice will be found the best.

A temperature of about fifty-five degrees will be found most favourable to the separation of the cream from the milk.

Where expense in the erection is not absolutely an object, then the apartment ought to be vaulted:

—at all events, however, it may be ceiled. The walls ought to be well white-washed, the floor well flagged or paved with proper tiles, and every thing so arranged as not to interfere with the utmost tidiness of preparation. If its size will permit, it is better to have shelves, of table height, arranged all around it, but if not sufficiently large, then another and a higher shelf may be added. Where the floor can be laid on a bias, with a gradual descent, either to the middle, where a small grating may lead to a drain, or else to one of the sides, it will be found a most convenient arrangement. No extra damp ought to be permitted to lie until it evaporates; and it ought to be an invariable rule that the cheese-presses shall be placed in another apartment.

If the inequality of the ground permits the dairy to be so placed that a pipe may be laid from a natural spring, with a small reservoir and stop-cock, great advantages from freshness and cleanliness must ensue, especially if the water can be made to fall from a height into the reservoir: otherwise there ought to be a good-sized reservoir, with ready means of replenishing it, so that the idea of trouble shall not tempt the dairy-maids to avoid the necessary expenditure of water.

In regard to the vessels used for the reception of milk, those of wood are unquestionably the sweetest, though they require more care with respect to scalding and rubbing than other materials. Those of lead have been in much request of late years, under the idea that they keep the milk cooler, but they may from accidental causes become prejudicial to the health, and they likewise require great attention. They should be scoured with salt, or Calais sand. Vessels of pottery are

often badly glazed, and that too with materials prejudicial to health. Before any of these are applied to use, if will be proper to test them by means of a short and simple process.

Fill the vessel with vinegar, into which put some fat of beef, salted. Set this upon a stew-pan to boil for half an hour; then set all by for twenty-four hours, and if the glazing is badly executed, small particles of the lead will be discovered of a black colour, proving the vessel to be unfit for use.

It has been recently stated, that the kind of oily coat which is formed by repeated coction on the internal surface of earthen vessels, and which is substituted for the glazing generally used in potteries, removes all the uneasiness respecting the possibility of poison, which has been felt since Ebell's examination of the danger of glazing with lead. This new invention is owing to Mr. Kirchoff, at St. Petersburg: the vessels covered with this kind of coat, serve not only for cooking, but also for preserving all kinds of acid, salt, and fat substances.

This application, however, even if efficacious, might sometimes lead to a false security; wherefore we consider constant manual cleanliness as a much better preservative.

Lately, cast-iron utensils have been manufactured for the dairy: and we understand that for neatness and cleanliness they cannot be surpassed by any other substance.

The dairy being arranged, the choice of cattle for its supply becomes the next object of consequence. To be well managed, indeed, a dairy at first sight appears expensive; but a moderate number of cows will always pay for the extra at-

tendance of keeping them as clean and comfortable as horses.

Perhaps no mode of managing cows can be found preferable to that adopted by Mr. Harley, of Glasgow, whose cow-house is an object of curiosity to all who visit that thriving and interesting city. When we saw Mr. Harley's *cow establishment*, it contained ninety-six inhabitants, each of whom was confined to a post by a chain across her neck, of sufficient length to allow her, by means of a sliding ring, to lie down when she pleased. The cows stood in pairs, one before another, on each side of the cow-house, leaving a space sufficiently wide for the attendants to pass backwards and forwards between them. Each pair has a grating before them, and the hay for the whole party is cut by means of a small steam-engine. The temperature is regulated with great exactness, the whole premises kept in the most delicate state of cleanliness, and the cows themselves are regularly curried and rubbed down, which supplies to them the place of exercise; as they never go out, except at a given period after the birth of their first calf, when they are always sold—not being retained by Mr. Harley long enough to have a second.

The milk is all sold in Glasgow; and, to prevent its being adulterated by the people who take it out, the barrels which contain it are covered by lids which have padlocks on them, and there is to each a lock-cock by which the milk is drawn out. A large stock of pigs is likewise kept on the milk of this establishment, and twenty roasters are selected from them every Wednesday, and sold at half a guinea each.

By adopting the cleanliness and judiciousness of

such of these regulations as may be practicable on a small scale, a private family may keep a cow with less trouble and expense than are attendant on keeping a horse. The scarcity and consequent dearness of milk is an evil daily increasing, not only in the capital, but even in country towns; on account of the enclosures which have taken place within late years, and of the pride and self-importance of modern farmers' wives, who look upon the concerns of the dairy as objects of such minor importance, as to be beneath their notice. Yet when we consider the privations that the children of the lower classes sustain, in consequence of the utter impossibility on the part of their parents to procure them this their natural aliment, and the prejudicial effects both on their health and future habits, which result from their being reared with beer and spirits, and other destructive potions, in its place; we cannot but recommend it most earnestly to the consideration of the benevolent, as well as the economical, that by keeping cows in all families where it may be practicable, they will not only be enabled to supply themselves with a variety of nutritious, delightful, and even elegant dishes, at a very small expense, but also to minister, without any perceptible deduction from their own stores, to the wants of their poorer neighbours; and especially to those of the patient little tribe, who, continually pinched with cold and hunger, endure for hours together, whilst sitting on the threshold of the rich and luxurious, such privations as would try the philosophy of most of our profoundest theorists.

Let it be kept in remembrance, that cows are profitable in all respects, not only in their present produce, but in their rearing calves for agricultural and dairy purposes, and in their fetching nearly their

first cost, when age requires that they should be fatted for the market.

In a moderate establishment, where several cows are kept, it will always be found that after serving the family, the overplus cheese and butter will pay the expense of keep, and go towards paying the first cost, so as to make the fattening of the cattle, when no longer fit for the dairy, an object of actual profit. This need not be doubted, when it is known that milch kine, well housed, will each give nine gallons of milk per day for some months; and, with care and judicious feeding, will not fall much below it for some time longer. Even the calves form an object in the scale of economy. If thought necessary or expedient to take them from the cow at the earliest age, they may easily be taught to drink a mixture of hot water and oatmeal, in the proportion of a pound of oatmeal to four quarts of water, adding to it about three pints of the skimmed milk; or they may be fed with hay tea, containing one quart of flax-seed to every two gallons of water. This, however, must only be practised, where, on a careful calculation, the milk thus saved will cover the expense of the artificial food. Where cows, are indeed, very prolific, the extra calves must either be killed or fed in this manner. Where they come singly, it is not so much an object; but in many instances there are twins, and even more. Of this fact it is needless to enumerate instances: but a more extraordinary instance of the fecundity of a cow than the following, we believe, is not on record,—she produced in July, 1815, five calves; in May, 1816, three ditto; in March, 1817, three ditto; in May, 1818, two ditto; and in April, 1819, three ditto; making together sixteen in the space of four years.

In choosing cows, from the various breeds, some consideration is always necessary.

Where amusement, more than absolute profit, is the object, the Alderney breed may be selected; not, indeed, that these are to be considered as unprofitable (for their milk is so very rich that the average of their annual butter may be reckoned as upwards of two hundred weight; and, though small, they always fetch a good price in the market when unfit for the dairy), but because their very high price, as milch cattle, places them rather beyond the limit of actual economy in the curtailment of outgoings.

If a distinction can conveniently be made, we would recommend the Alderney cattle for *butter*; but for *cheese*, the long-horned Lancashire breed, the produce of whose milk in the latter article is equal to that of the Alderney breed in the former. The very worst of the Lancashire will yield four gallons of milk per day; some of them half as much more; and they will finally pay for themselves in the market.

But if milk in its natural state be the principal object in the dairy, the best breed is the Holderness, sometimes called *Dutch*, perhaps from their coming up from that district of Lincolnshire which bears the name of *Holland*.

Though considered the most valuable for agricultural purposes, we may, perhaps, place last on the list the Devonshire breed; but without any disparagement of their peculiar good qualities.

It will not be uninteresting, to record some recent and highly curious experiments in the properties of milk, and their philosophical application to domestic purposes, which have been tried in Switzerland. It appears from the literary records of

the day, that Dr. Schübler, Professor of Chemistry applied to Agriculture in the celebrated institution of M. de Fellenberg, at Hofwyl, has been led to results equally curious and interesting to the farmer of every country.

"Morning's milk," he says, "commonly yields some hundredths more cream than the evening's at the same temperature. That milked at noon furnishes the least; it would, therefore, be of advantage, in making butter and cheese, to employ the morning's milk, and to keep the evening's for domestic use.

"In milking cows, this singular phenomenon is observed, that the milk obtained from one and the same milking differs considerably in quality; that contrary to what might be expected, the milk first extracted is not the best; but that which is obtained last contains invariably the largest proportion of cream. To satisfy myself thoroughly on this point, I caused a meal's milk of one cow to be milked into five vessels of the same size, and then separately examined the milk in each, in the order in which it was taken. The results were as follow:—

	Areometer.	Specific Gravity.	Cream.
No. 1	56	1034,0	5 p. cent.
2	55	1033,4	8
3	54	1032,7	11,5
4	52	1035,5	13,5
5	48	1029,0	17,5
Average	53	1032,1	11,05

"To ascertain whether the quantity of caseum differed in like manner, I had a young and healthy cow milked clean into ten different vessels. The first milked was, as usual, the heaviest, and the last contained the most cream.—After the milk was nicely skimmed, I found its weight in an inverse ratio; now the first milked was the lightest, and the last the heaviest and richest in caseous matter; so that the milk obtained last is better also in regard to the quantity of caseum,

"In an experiment of this kind, I caused the milk to be drawn first from the left side of a cow's udder, and afterwards from the right; the latter was the best. The following day I reversed the experiment; and still the milk last extracted was the richest.

"The subjoined table exhibits the gradation in the quality of the milk found by the above experiments:—

	Num of vessels.	Sp. Grav. of the fresh milk.	Mean Sp. Gr.	Proportion of Cream.	Sp. Grav. of the skimm'd milk.	1000 pts. of skimmed con. eas. pts.
Right Side.	1	1033,1	1032,7	8,3 p. ct.	1035,6	49
	2	1033				
	3	1032,7				
	4	1032				
Left Side.	5	1031,6	1031,7	12,7	1036	50,1
	6	1030,7				
	7	1031,7				
	8	1030,6				
	9	1028,6	1026,3	26,6	1036,6	52,3
	10	1024				

"Thus the milk of the 7th vessel, with which the left side was begun, proved of inferior quality;

and in some succeeding experiments, it became as poor as that of the first. The increase of cream was found beyond all proportion in the vessels last milked, especially when compared with the augmentation in the early ones. The diminution of weight in the first portions was from 0,1 to 0,3 and 0,7; and in the last it was in the proportion of 1,1 to 2 and 2,6. In one of my experiments, after having caused both sides to be well milked, I attempted to begin the operation for the second time on the left side, and afterwards on the right: I obtained again a small quantity of milk from both sides, which was much richer in cream than that previously extracted; and the whole of this last essay was still better,—it yielded 42 per cent. of cream.

"I have repeated these experiments with several cows; the difference between the milk of the right and left, according as I caused them to be milked first on the one side or the other, was frequently less considerable than in the case above cited; sometimes, indeed, but trifling; yet the milk obtained last from each side, and also from each particular teat, was constantly richer both in butter and cheese."

Unwilling to omit any thing which may eventually be useful to our readers, we trust to be excused in stating here, that the foreign journals inform us, that Kirchoff, the chemist who discovered the process of forming sugar from starch, gives the following simple mode of preserving that agreeable fluid. Fresh milk is to be slowly evaporated by a very gentle heat, till it is reduced to a dry powder. This substance should be kept in a dry and well stopped bottle. Diluted with a sufficient quantity of water, it possesses

considerable analogy, both in its taste and other properties with new milk. This would be a very convenient form of taking milk to sea, where a cow cannot be accommodated.

Passing on, however, to more practical purposes, we may observe, that skimmed milk is now become an object of some importance in home commerce, as a means of fining down wine and spirits.

The economic *dairyist* will find advantage in noting, that of all green foods, sainfoin is indubitably the best to increase milk and cream, both in quantity and quality; but when the cattle cannot procure green succulent food, it will be judicious to give them their preserved fodder, either boiled or steeped in warm water, allowing it to stand until cold—a process, in fact, which is said to produce a saving equal to three-fourths of the food. The cattle must be permitted not only to eat the hay, but also to drink the water; but when water is given solely for drink, then it will always be much improved by boiling in it half a dozen handfuls of hay to every twenty gallons of liquid.

It has often been observed, in countries where there are springs of different temperatures, that when the cows are in the habit of drinking at the hot-springs, which they will do of choice, they always give more milk than when drinking cold water.

When cattle are artificially fed, the butter sometimes acquires a peculiarly unpleasant taste—a circumstance which may always be guarded against by the simple operation of putting a piece of saltpetre, about the size of a nutmeg, into each vessel which may be large enough to hold as much cream as will make six pounds of butter.

Parsnips are said to have the least effect in giving

an unpleasant or peculiar flavour to milk; so much so, indeed, that it is by some agriculturists considered as judicious to sow even the best land with that root. Carrots rank next with respect to flavour, producing also an additional quantity of milk, when given in the very latest period of the winter season, or before the green food begins to shew itself.

Turnips, of course, rank last; but where no other food can be procured, the disagreeable odour given to the milk may be counteracted, in a great degree, by a weak solution of nitre in spring water, applied in the proportion of one small table-spoonful to every two gallons, as soon as the milk comes into the dairy. It may also be removed by the following simple process in the preparation of the milk for dairy purposes.

Let the bowls, whether of lead or wood, or earthenware, be kept constantly clean, and well scalded with boiling water before using. When the milk is brought into the dairy, to every eight quarts add one quart of boiling water; and then put the milk into the bowls to stand for cream. By keeping strictly to this practice, sweet and well-tasted butter has been made all the winter from cows house-fed upon turnips solely.

A little hay may, however, be given at intervals; and a mash of bran with warm water, every evening.

One other species of winter food must yet be noticed. The attention of agriculturists was some time since directed in a particular manner to the Mangle Wurzle, which was stated, on the authority of Lord CREWE, Mr. COKE, and Mr. TOLLET, to be pernicious to cattle. It seems now to be decided that the disorder complained of proceeds

rather from the manner in which this root is given, than from the root itself; and that cattle, feeding greedily upon mangel wurzel thrown to them on a bare pasture, without any other food to qualify the excessive proportion of water contained in it, cannot be expected to escape injury.

Whatever the food, it will always be found that in salting butter for winter use, a great improvement will be found to arise from mixing one ounce of crude sal ammoniac, and two ounces of salt-petre finely powdered, with one peck of salt. This requires a small quantity to be used, and gives a more agreeable flavour than the usual mode of applying common salt alone.

There is a very ingenious mode recommended to ensure good butter in winter, which is by preparing half the supposed quantity required in winter, during the course of the summer. The process is to salt, and dye it a deep colour with marygold or annotto. Then, in winter, put as much of this into the churn as it is expected the milk will produce. They will thus be intimately mixed together, and equally salted; and the whole mass will have a flavour equal to that of summer butter.

A new method has lately been proposed, which may appear, at first sight, as tedious in the process; but which certainly requires less labour than the usual mode. It is thus:—Put the cream intended for butter into a strong linen cloth; tie it up tight with a string, dig a hole in the earth fifteen inches deep, and let the bottom of it be sufficiently capacious to allow the cream to lie about four inches deep all over it. Put another cloth around that which contains the cream, to keep the dirt from it. When deposited in the hole, cover

it up with the earth (but do not tread it down), and let it remain 24 or 26 hours; then take it out and pour the cream, which will now be very thick, into a bowl or other vessel, and stir it well, from five to ten minutes, with a wooden spoon or ladle; when the butter will be completely formed. The advantages of this mode are as follow:—1st, the cream yields a larger quantity of butter, or an addition of about one pound in ten; 2nd, in hot weather, butter is obtained without a tedious process, and is free from the rancid taste that long and hot churned butter generally possesses; and 3rd, a very small stock of cream may be operated upon equally, as well as a larger quantity.

A species of churn has been for some time in use in the neighbourhood of Rootan Hall, in Wales, called the Cradle Churn, made upon the principle of a common rocking-horse; it can with ease be worked by a child of five or six years old Sir R. Vaughan is so well convinced, from experience, of the superiority of this churn, that he has had many made and distributed among his tenants. The shape is of no consequence, provided it be made considerably wider at the top than at the bottom, that it may churn either a large or small quantity of milk equally well; but the usual form is that of a canoe.

We may conclude our economical hints on butter with one observation respecting the best mode of preserving it; which is, that when vessels of pottery are employed, it is preferable that, instead of being glazed within, they should be impregnated with melted wax or tallow, or saturated with a solution of muriate of soda. If wooden vessels are employed, they should be saturated in the same manner, having first been well varnished on

the outside. If any empty space is left, the air must be expelled, by pouring in, as before directed, a saturated solution of soda. Butter may also be preserved, deposited in the middle of its containing vessel, and surrounded completely with the same solution. In this case, the vessel is provided with a false bottom and cover.

The fair economist will find that a calculation of three quarters of a pound of butter per week, for every individual in her household, will, in general, be a very correct allowance for expenditure.

In regard to *Cheese*, we profess not to write a treatise, but still we may offer some economic hints as to the imitations of various kinds. At the same time we offer a caveat against all professed adulterations, or colouring with deleterious substances. Let us refrain from imitating Gloster cheese, if we can only do so by the use of red lead; a practice already too common, but which may always be detected by a little chemical skill; scraping the cheese into water in which sulphuretted hydrogen is combined, with a small portion of muriatic acid, when the adulterated cheese changes its red colour for a deep black or brown.

Fresh cheese may be made at all times of the year, with a little care, equal to that which comes from Lincolnshire in the radish season; by merely adding new milk to that of the preceding milking, letting them stand, and pressing them gently two or three times, after which they may be turned daily for a few days, and used at pleasure; and our readers may produce their own *Stilton* by the following simple process:—To the new milk of the cheese-making morning, add the cream from that of the preceding evening, together with the rennet, watching the full separation of the curd, which

must be removed from the whey without breaking, and placed in a sieve until of such a consistence as to bear being lifted up and placed in a hoop that will receive it without much pressure. The cheese as it dries will shrink up, and must therefore be placed from time to time in a tighter hoop, and turned daily until it acquires the proper degree of consistence for use or keeping.

If it is intended to imitate Parmesan, let the day's milk be heated to the degree of 120 of Fahrenheit, then removed from the fire until all motion ceases. Put in the rennet, allow an hour for the coagulation, after which set the curd on a slow fire until heated to 150, during which the curd separates in small lumps. A few pinches of saffron are then thrown in, together with cold water sufficient to reduce it instantly to a bearable heat, when the curd is collected, by passing a cloth beneath it, and gathering it up at the corners. Place the curd in a circle of wood without a bottom; lay it on a table covered by a round piece of wood, pressed down by a heavy stone. The cheese will acquire sufficient consistence in the course of a night to bear turning, when the upper side is to be rubbed with salt, to be continued alternately for forty days.

In Italy they next cut off the outer crust, and varnish the new surface with linseed oil; but that may well be omitted, as well as colouring one side of it red.

It may be also noted that the day's milk is formed from the evening milk skimmed at morning and at noon; and from the morning's milk skimmed at noon.

It is estimated in all dairy counties that about three acres of land are necessary for each cow; and

that a cow properly fed and well treated, will yield a pound of curd for every gallon of milk, producing annually from three to four hundred weight of cheese for the market.

Perhaps one of the greatest comforts connected with a dairy, is the certainty of having milk and cream free from adulteration. A point of similar importance, in regard to the next object of discussion, is the

BAKERY.

There is no article of more home importance in domestic economy than the bread which forms so material a part of our daily nourishment, together with the flour which enters into so many culinary preparations; and there can be no doubt that when every part of the process can be home-made, there must always ensue a considerable *saving* both in health and comfort.

The superior nutritious qualities of bread have been doubted; but the question has recently been set at rest in France, by some chemical researches into the proportional nutriment of various edible substances.

MM. Percy and Vauquelin were appointed to make the experiments on which the solution of these questions rested, and they have published the results in an interesting report on domestic economy. They have ascertained that bread contains 80 nutritive parts in 100; meal 34 in 100; French beans, 92 *idem;* common beans, 89 *idem;* peas, 93 *idem;* lentils, 94 *idem;* cabbages and turnips, the most aqueous of all the vegetables compared, produce only eight pounds of solid matter in 100 pounds; carrots and spinach produce

14 in the same quantity; whilst 100 pounds of potatoes contains 25 pounds of dry substance. It must be recollected, that the solid parts, when separated from the aqueous or humid parts, may contain a small quantity of extractive or ligneous matter, probably unfit for food; and next, that the same substances do not act uniformly on all stomachs, and are relatively more or less nutritious. But as a general result, the learned reporters estimate that one pound of good bread is equal to two pounds and a half or three pounds of potatoes; that 75 pounds of bread and 30 of meat, may be substituted for 300 pounds of potatoes. The other substances bear the following proportions:— Four parts of cabbage to one of potatoes; three parts of turnips to one *idem;* two parts of carrots and spinach to one *idem;* and about three parts and a half of potatoes to one of rice, lentils, beans, French beans, and dry peas.

The goodness of corn, as a mere article of trade, is measured by the comparative smallness of the quantity of bran which it produces. This, indeed, in family economy, is not of high importance; but if it is wished to make a distinction, then select such wheat as is round and plump, rejecting that which is shrivelled, as yielding most bran. Where plump and shrivelled grains are found together in the same binn, they may be separated by simple immersion in water. If the grain be all sound and of equal quality, the smallest grains will still be proportionably the lightest, and will swim whilst the others fall to the bottom; and should a very strict separation be wished for, it may be produced by a judicious application of weak brine, which being gradually poured in, so as to increase the specific gravity of the water, the lighter grains

will proportionally rise: this, however, must be stopped in time, otherwise the water will be so impregnated with salt that the whole of the grain will rise to the surface.

If the grain is dried immediately afterwards, it will not receive any damage from the experiment.

Should the whole of the harvesting appear at first sight to be damaged, it is not on that account to be absolutely rejected. A gentleman of considerable science and experience has communicated to the Royal Society a process for sweetening musty corn, by simply immersing it in boiling water and letting it remain till cold. The quantity of water should be double that of the corn to be purified. He has found that the musty quality rarely penetrates through the husk of the wheat, and that in the very worst cases it does not extend beyond the amylaceous matter immediately under the skin. In the hot water all the decayed or rotten grains swim on the surface, so that the remaining wheat is effectually cleaned from all impurities, and without any material loss. The wheat must afterwards be dried and occasionally stirred on the kiln, when it will be found improved to a degree scarcely credible without actual experience.

The first adulteration of flour may be suspected to take place at the mill; but even this, with a little care, may be guarded against by an expense, at first, of about six guineas for a portable mill, which will grind any kind of grain with little comparative trouble.

This mill was originally constructed for the purpose of supplying the French armies with flour, during their march to Moscow; when its merits were fully proved. It was brought from Paris by Sir John Sinclair, and presented by him to the

Society of Arts, by whom it is considered one of the most useful machines ever submitted to the notice of that scientific body. With the power of one man it will grind about a bushel of wheat in two hours, and he may grind from four to five bushels per day. It will last for many years, and is not liable to go wrong: the only precautions required in the use of it are, not to drive it above twenty revolutions a minute, as in that case it would heat (sixteen or seventeen revolutions are as many as are necessary); not to allow the handle to be turned when the mill is empty; and to prevent pieces of iron or hard stone from getting into it. The corn should be dry, or otherwise it would clog the plates, which would make it necessary to take the mill to pieces to clear them. It can easily be attached to any power, either of horses, steam, or water.

People in the flour trade generally knead a small quantity by way of experiment; if good, it immediately forms an adhesive, elastic paste, which will readily assume any form, without danger of breaking: pure and unadulterated flour may likewise be easily distinguished by other methods. Seize a handful briskly, and squeeze it half a minute; it preserves the form of the cavity of the hand in one piece, although it may be rudely placed on the table. Not so that which contains foreign substances: it breaks in pieces more or less—that mixed with whiting being the most adhesive, but still dividing and falling down in a little time. Flour mixed with ground stones, bones, or plaster of Paris, loses its form at once, and the more bran there may be in it, the sooner it will be flat on the board. It may also be observed, that genuine flour will longer keep the impression even of the

grains of the skin, than that which is adulterated, the latter very soon throwing up the fine marks. Let a person of a moist skin rub flour briskly between the palms of both hands: if there be whiting among it, he will find resistance; but if white pure flour none. If there is time, put a table-spoonful into a basin and mix with cold water until it is of the consistence of pudding-batter; then set a small pan upon the fire with half a gill of water: when this water is hot, but before it boils, pour in the batter, and let it boil three minutes. If sound, the flour will unite as a good sound pudding; if unsound, it breaks, curdles, and appears somewhat watery. Again; drop the juice of a lemon, or good vinegar upon flour: if the flour be pure, it remains at rest; if adulterated, an immediate commotion takes place. This is the readiest method of detecting stone-dust and plaster of Paris. Or, after having dipped the fore-finger and thumb partially in sweet oil, take up a small quantity of flour: if it be pure, you may freely rub the fingers together for any length of time; it will not become sticky, and the substance will turn nearly black; but if whiting be mixed with the flour, a few times rubbing turns it into putty; but its colour is very little changed. Among the means of adulterating flour, great use has lately been made of bones, the price of which has accordingly advanced within these few years from tenpence a bushel to eighteenpence, to the first purchasers. The collecting of bones is in fact pursued as a regular trade in the metropolis.

The admixture of fine pulverised clay in the prime necessary of life, is likewise a practice in many parts of the kingdom: the industrious adulterators thinking perhaps that the white or Corn-

wall clay might be equal in its nutritious qualities to the German clay, which was thus described some years ago in a German Ephemeris:—

"In the lordship of Moscaw, in the Upper Lusatia, a sort of white earth is found, of which the poor, urged thereto no doubt by the calamities of the war in those parts, actually made bread. It is taken out of a hill where they formerly worked saltpetre: when the sun has somewhat warmed this earth, it cracks, and small white globules proceed from it as from meal; it does not ferment alone, but only when mixed up with meal. M. Sarlitz, a Saxon gentleman, was pleased to inform us, that he has seen persons who in a great measure lived upon it for some time. He assures us, that he procured bread to be made of this earth alone, and of different mixtures of earth and meal, and that he even kept some of this bread by him upwards of six years: he further says, a Spaniard told him that this earth is also found near Gironne in Catalonia."

We trust, however, that no rapacious millers or flour-factors will again be enabled to force their countrymen to swallow clay instead of bread. Though man may originally be made of clay, it is not necessary that he should return to it before the good time ordained by Providence.

As the economical housewife will assiduously avoid the use of alum in her bread, so must she shun all other chemical adulterations, except in cases where the flour to be used is unavoidably musty, or where it is new flour after a wet season, when the bread often comes out of the oven with an unpleasant heaviness about it, which may induce families to give up their own wholesome home-baked, for the produce of some *scientific* baker.

The evil spoken of has been obviated by the carbonate of magnesia, but the best remedy is the carbonate of ammonia. If the flour be not very unsound, for 14lbs. of it, use one ounce of carbonate of ammonia, taking particular care to purchase where you can rely upon having it *pure*, as much depends on this. This carbonate should be dissolved in a little warm water, and then put into such further quantity of water as may be requisite for kneading the dough quite stiff. As this carbonate is volatile, and all flies off, there is no impropriety in increasing the quantity. It is generally used by bakers and confectioners. In case the flour be very bad, it might be well to make the experiment with 7lbs. of it, as a much larger quantity of the ammonia would be needful; but the very worst of flour may be rendered useable if sufficient of the carbonate of ammonia be introduced. When purchased, the ammonia should be tightly corked up in a phial, in order to prevent evaporation, to which it is greatly liable. An ounce of carbonate of ammonia costs threepence, which is only half the price of carbonated soda

A considerable increase in home-made bread, even equal to one-fifth, may be produced by using bran water for kneading the dough. The proportion is three pounds of bran for every twenty-eight pounds of flour, to be boiled for an hour, and then strained through a hair sieve. The bran need not then be lost, but mixed up with dry food for the poultry yard.

In baking bread the following mode was formerly practised generally in the county of Essex, even so late as the sixteenth century:—Take pealed turnips; boil them until they are soft; press out the juice and mix them, beaten very fine and small, in

their own weight of wheat or flour; add salt dissolved in warm water; knead the whole like other dough, and bake it.

Excellent paste for meat or fruit pies may be made with two-thirds of wheat flour, one-third of the flour of boiled potatoes, and some butter or dripping; the whole being brought to a proper consistence with warm water, and a small quantity of yeast added where lightness is particularly wished for. This will also make very pleasant cakes for breakfast; and may be made with or without spices, fruit, &c.

Mr. Whately, of Cork, received a gold medal in the year 1813, from the Society for the Encouragement of Arts and Sciences, for a machine for the expeditious rasping of potatoes, and for his experiments in making bread with the farina of them. The bad harvest in 1816 again turned his attention to his favourite theory, and he thus expresses himself on the subject:—"Having by me a considerable quantity of the former which I had prepared in the year 1813, I began to use it in bread, and find that it has not only very much improved from age, by losing the strong flavour of the raw potatoe, which it retains when recently made, but that it serves to render the flour made from the wheat of last season more palatable. The proportion that I make use of is one-fourth; which has the effect of making the bread lighter, drier, and beyond comparison better than the bread made from the wheaten flour alone of the last crop; and I can safely and strongly recommend its adoption to all those who find bread from new flour heavy, glutinous, and difficult in the preparation. It should be remarked that the farina I am using was made at a late period of the spring

and early in the summer of 1813, after a considerable vegetation had commenced in the potatoes; consequently, it is neither so good nor so profitable as if it had been made before the vegetative process began. The best time for making it is during the first three or four months after the potatoes have been dug from the ground; and although they yield farina to a very late period of the year, it is neither so nutritive in quality, nor so great in quantity, as when it is made at an earlier period. The experiment proves how extremely advantageous it would be for the public, in years when the crop of potatoes is very abundant, to convert a portion of it into farina; which experience proves, when properly dried, will keep good for almost an indefinite length of time. In such seasons, the farina, which is about one-seventh part of the potatoe, would be produced at about twopence halfpenny or threepence per pound.

"It might remain stored up in casks until the seasons called for its use, and become a very great and profitable resource in times of scarcity. Indeed, from the peculiar quality that it possesses, of continuing for years to afford its nutritive properties, not merely uninjured, but really improved by age, I know of no article of food which can with such advantage be furnished from the bounties of Providence in one season, to administer to the wants of another. It offers such strong inducement in this respect to speculative men, that I shall hope hereafter, in an unproductive year, to see very great relief afforded from it.

"The manufacturer has only to prepare it after the manner of starch at those times when the price indicates a very plentiful supply of potatoes, and to reserve it in his warehouse until a sufficiently

tempting price calls it forth, greatly to his own advantage, and to that of the public. Perhaps it is not unreasonable to calculate, that every seventh year would give him the opportunity of doubling or trebling capital thus employed, and I consider it would be well worth the attention of any speculative individual, residing in a country where potatoes are cheap and distant from market, to put this experiment in practice upon a large scale." An account of this process, which is very simple, and a drawing of the machine, may be seen in the volume of the Transactions of the Society of Arts for 1813.

Whilst the connexion between potatoes and flour is thus before us, it may not be amiss to observe, that there are few cooks but what boil twice as many potatoes every day as are wanted, and fewer still that do not throw the residue away as totally unfit in any shape for the next day's meal. Yet, if they would take the trouble to beat up the despised cold potatoes with an equal quantity of flour, they would find them produce a much lighter dumpling or pudding, than they can make with flour alone; and by the aid of a few spoonfulls of good gravy, easily manufactured from the browner parts of the dripping-pan, whilst a joint of meat is at the fire, they will provide a cheap and agreeable appendage to the dinner-table, which the younger branches of the family will relish far more than that part of their meal which is furnished by the butcher.

To preserve yeast through the winter, it may be beat up with a whisk until it appears thin and even; then spread it in thin coats upon plates, coating each over again as they dry, until about half an inch in thickness, when they may be taken

off the plates, broken into small pieces, and kept for use in bottles closely stopped.

If there be a cheese-press or screw-press at hand, the yeast may be preserved by a simpler method. Fill a canvas bag with the yeast, and submit it to the action of the press, which will squeeze out all the moisture, when the residue may be well packed in paper, so as to keep it from the air and from moisture. The following mode of making yeast is both easy and expeditious. Boil one pound of good flour, a quarter of a pound of brown sugar, and a little salt, in two gallons of water for an hour. When milk-warm, bottle it and cork it close. It will be fit for use in twenty-four hours. One pint of this will make eighteen pounds of bread. The average expenditure of bread may be taken at three-quarters of a pound for each individual in a family daily.

There are other offices of culinary activity which require notice, but as they are principally connected with the social circles of superior affluence, we shall first proceed to examine the

LAUNDRY,

as an office of more general use, and one which requires specific investigation.

This most important department of domestic economy naturally includes the *Washhouse*, into which philosophy has introduced among other useful principles the new plan, by means of which linen is washed, not by hand, but by a machine constantly turning round, in which the linen is enclosed. All that is required is to rub the linen with soap the night previous, and then the cylinder into which it is put ought to move so rapidly

as not to whirl it completely round, but that it shall be heard to fall at every half revolution; and, if moved at a proper velocity, each change of linen will be washed in less than half an hour, without rubbing, but with the addition of alkali or potash, which may be now used of a greater strength than when washing by the hand. The linen is then rinsed, and a little hand-washing applied where necessary.

Boiling is then requisite; after which the linen is drained on a tray full of holes over a reservoir, which receives the soapy water for further use. The process of wringing is also shortened and improved, by placing the linen in a square box of strong sacking, kept open by iron rings, and shut up in a cast-iron box, with a sliding plate forced against the end of the bag by a rack and pinion, and turned by a winch. By this process the clothes are squeezed much drier than by the common method, and the pressure upon all parts being uniform, less injury is done to the texture of the linen.

But, whether washing is carried on by the new mechanical process, or by the usual manual mode, a choice of the best materials will always be of high importance. The quality of the water in particular requires due observance: for it must be remembered that water impregnated with earthy salts, can never be used to advantage; and, if tinged with the minutest solution of iron, it will always give a yellowish hue to the linen or muslin, which it will be extremely difficult to get rid of.

When water is hard, and will not readily unite with soap, it will always be proper to boil it before use; which will be found sufficiently efficacious, if the hardness depends solely upon the subcarbonate

of lime. Even exposure to the atmosphere will produce this effect in a great degree upon spring water so impregnated, leaving it much fitter for lavatory purposes. In both cases the water ought to be carefully poured off from the sediment, as the neutralized lime, when freed from its extra quantity of carbonic acid, falls to the bottom by its own gravity.

Boiling, however, has no effect, when the hardness of the water proceeds from lime united with the sulphuric acid, or sulphate of lime of the modern chemistry: and it must be neutralized, or brought to its proper state, by the application of common wood-ashes from the kitchen-grate, or of barilla, now called soda, or the Dantzic ashes, or pearl-ash; or by the more scientific process of dropping in a solution of subcarbonate of potash. Each of these unites with the sulphuric acid, and separates it from the lime, which gravitates, as in the former case, to the bottom.

To economise soap, put any quantity of pearl-ash into a large jar, covered from the dust; in a few days the alkali will become liquid, which must be diluted in double its quantity of soft water, with its equal quantity of new slaked lime. Boil it half an hour, frequently stirring it; adding as much more hot water, and drawing off the liquor, when the residuum may be boiled afresh, and drained until it ceases to feel acrid to the tongue.

Much soap and much manual labour also may be saved by dissolving alum and chalk in bran-water, in which the linen ought to be boiled, then well rinsed out, and exposed to the usual process of bleaching.

Soap may also be totally disused, or nearly so, in the getting up of muslins and chintzes, which should always be treated agreeably to the oriental

manner; that is, to wash them in plain water, and then boil them in *conjee*, or rice-water; after which they ought not to be submitted to the operation of the smoothing-iron, but rubbed smooth with a polished stone.

Some attempts have been made to improve the ordinary process of smoothing linen, upon the principle that, where hot pressure is to be used, we may avail ourselves with great advantage of the difference of specific caloric that bodies possess; as in the specific caloric of sand and iron for instance: taking equal bulks of each, raised to the same degree of temperature, the former will contain much more heat than the latter. If, then, we suppose two irons used for the common domestic purpose of smoothing linen, one of which is made of solid iron, and the other of a hollow shell of iron filled with sand, and the two are raised to the same temperature, that containing sand, owing to the difference of specific caloric and conducting power, will retain its heat much longer than the one of solid iron. Sand or stone-heaters may also be applied to tea-urns, and a variety of other domestic uses; besides their application to hot-pressing in several departments of our manufactures.

Amongst other advantages intended to arise from the plan of heating dwelling-houses and offices by warm air running through tubes, properly directed for that purpose, is the very important one that a much greater degree of heat can be introduced, both in the wash-house and laundry, than could otherwise be borne by the female assistants. Upon this principle it is proposed to introduce hot closets, through which a current of heated air is made to pass from a stove, which also heats the smoothing-irons; and it is proved, that if the clothes are properly washed and got up,

they will, when solely dried by this hot air, preserve their whiteness as perfectly as if dried by exposure to the open atmosphere.

When linen is soiled and discoloured by town washing, or by age, or lying-by out of use, the best bleaching materials are the natural verdure of the ground, with the dews and winds of Heaven. A more speedy mode may however be wished for, in which case a little chemical skill is useful. The linen must undergo a process of two ablutions, the first in a mixture of ley, formed in the proportion of one pound of common soda to a gallon of soft water in a boiling state, where it must lie for twelve hours, and then be boiled for half an hour in the same liquid; after which it must pass through the second ablution, in a mixture of the common bleaching-powder (hyperoxymuriate of lime) with eight times its quanity of water, or a pound to a gallon, which must be well shaken in a stone jar for three days, then allowed to settle, and being drawn off clear, the linen must be steeped in it for six-and-thirty hours, and then washed by the usual process: this will take out all but ink-stains.

Grass-bleaching is always best for discoloured linen or muslin; but in town, or when in a hurry, mix a pound of oxymuriate of lime with six quarts of soft water, and put a portion of this into the tub where the articles are steeping.

To remove iron-moulds, take some crystallized citric acid: pound a small quantity to a fine powder, and apply it to the spot; drop some hot water on, and rub it in, upon a pewter plate over a stove, until the oxyde of the iron unites with the acid, when a little warm water washes all out.

Where spots from iron or ink are of too long

standing to be readily removed, a more chemical process is required. Take sulphurate of potash, or muriate of tin; apply it to the spot, and let it remain about five minutes, when it must be washed out. Then apply to it some citric acid. The older the spots, the oftener must the process be repeated.

Ink spots in linen may be taken out by melting part of a mould candle, and dipping the spot in it, before the linen is put into the washing-tub.

The most difficult spots to remove, are those upon coloured stuffs, so as to preserve the similarity of colour. Stains of acid vegetables, such as orange-juice, &c. are destroyed by the application of alkaline salts: the best of which are a mixture of alcohol and liquid ammonia.

Stains from an alkaline substance, on the contrary, must be neutralized by the acid of vinegar, diluted.

Muslin, when stained by wine, will be best restored by rubbing with soft soap and common whiteing, before washing; after which it must be kept wet, and exposed to the sun and air.

To remove spots of grease, moisten them with a few drops of concentrated solution of subcarbonate of potash; rub the spot between the fingers, so that the alkali may unite chemically with the grease, forming a species of soap, which a little warm water will wash out.

To remove spots of wax, moisten them repeatedly with alcohol, or strong spirits of wine, when the wax will become dry and brittle, yielding easily to the action of a brush.

If, however, the spots are of long standing, it will be a readier mode to apply a few drops of rectified turpentine, rub it well in, and wash out with soap and water.

To remove oil paint, apply oil of turpentine, and wash it out.

These are all applicable to linens, cottons, and woollens; but silk requires another process to remove spots of grease. Take some fullers' earth, powder it, and mix into a paste with water. Apply it to the spot; let it dry, and then brush out; after which remove the marks with a little sulphuric ether, which must again be washed out with spirits of wine.

For *Marking Ink*, several processes are recommended. The simplest is to mix the juice of the sloe with green vitriol; but, as the sloe-juice cannot always be had, there is another process equally permanent.

Take a drachm of nitrate of quicksilver, commonly called lunar caustic, dissolve it in a glass mortar in double its weight of pure water: this is the ink. Dissolve a drachm of salt of tartar in an ounce of water, in another vessel: this is the liquid with which the linen must be first wetted, then allowed to dry, and finally to be written on: or, take vermilion, as much as will lay on a half-crown piece; of the best salt of steel, about the size of a small nutmeg; grind or levigate well together with linseed oil. You may make it thick or thin at discretion.

The price of starch, it should be remembered, is regulated by the price of flour; and as it will keep for some years, if covered up, in a warm dry place, the economical laundress will lay in her stock of this article at the time when bread is cheap

It has been recommended, for the sake of economizing flour, that the starch used for stiffening muslins, and other fine stuffs in the laundry, should be made of the flour of Canary seed, which

is considered as superior for that purpose; and also for the purpose of manufacture when in the loom: but perhaps a much better substitute may be found in the starch of rice flour, already noticed, which forms the dressing paste, or *conjee*, in the Indian looms, as well as the starch in getting up muslins in India.

It must be recollected too, that much of the softness of the Indian cotton depends upon the palm-oil, which, even when not specifically applied, constantly oozes out of the fingers of the spinner and the weaver.

So much superior is the mode of getting up muslins in India, that formerly our home nabobesses used to send out their soiled dresses to India, once a year, for the purpose of oriental clear-starching. Isinglass has lately been brought into use; but with little advantage, except when peculiar stiffness is required.

When the linen is well dried, and deposited in the wardrobe, nothing more is necessary than to secure it from damp and insects; and the latter operation may be most agreeably performed by a judicious mixture of aromatic shrubs and flowers, cut up and sewed up in silken bags, to be interspersed amongst the drawers and shelves.

These ingredients may consist of lavender, rosemary, thyme, roses, cedar shavings, powdered sassafras, and cassia lignea, &c. &c. in which a few drops of attar of roses, or other strong perfume may be thrown.

It will be found economical in all cases; but linen, and all other washable articles, should be strictly examined and carefully repaired previous to their being admitted into the laundry. It will also be prudent to have all articles carefully num-

bered, and so arranged after washing as to have their regular term in domestic use.

Another saving will be found in the purchase of soap in large quantities, cutting it in pieces of about a pound weight each, and keeping it in a place of moderate temperature and dryness. If the quantity necessary for one year is first laid in, it ought to be filled up every six months; and thus a smaller quantity of the article will suffice, as much less goes to waste; with a saving of, perhaps, thirty per cent.

We shall close this section by noticing, that as linen may sometimes be scorched or browned in the getting up, without being actually burned through, even the effect of this may be removed. The process is simple. Add to a quart of vinegar, the juice of half-a-dozen large onions, about an ounce of soap rasped down, a quarter of a pound of fullers' earth, one ounce of lime, and one ounce of pearl-ash, or any other strong alkali. Boil the whole until it is pretty thick, and lay some of it on the scorched part, suffering it to dry. It will be found that, on repeating this process for one or two washings, the mark will be completely removed from the linen without any additional damage; provided its texture has not been absolutely injured, as well as discoloured.

The offices of general use thus disposed of, we shall proceed to the

CONFECTIONARY.

Those who seek for common recipes in this branch of domestic management, must refer at once to the usual works on the subject; yet in this reference we neither enforce the economy of

time, of money, or of health, all of which may be wasted by a strict adherence to the variety of directions which the culinary taste of their writers and their readers appear to have rendered necessary.

It happens unfortunately, in utter despite of all economy, that the confectionary of the present day is more for show than use, and is a mere waste of the materials which a bountiful Providence has given to us in almost endless variety, for the purpose not only of gratifying the taste, but also of increasing the quantity of food, whilst prompting to the use of edibles not so superabundantly nutritious as animal food, whether fish, flesh, or fowl.

In fact, in the old English household arrangement, confectionary, in all its branches, acted as a certain and speedy aid to the larder in days of hospitality, when either visits or visitations were unexpectedly made at the castle, the abbey, the hall, or the grange; and was almost invariably joined in the cookery of all dishes, except the plain solid sirloins or rounds, under which even their heavy boards groaned, before sympathetic or sliding tables came into fashion.

It is, then, to the useful adoption of confectionary that we would call the attention of our readers, not only as aiding a small income to make a good appearance, but as tending to the preservation of health, and affording a pleasing variety of occupation to such young ladies as may wish to be valued for something more useful than the mere amusement of the hour.

It is indeed a powerful objection to the practice of kitchen superintendence for young ladies of the present day, that the society to which they would thus be exposed would be unpleasant, if not dangerous. This arises from two causes, especially in London, and in almost all houses of modern con-

struction: the first is the want of room, which throws all the servants, male and female, into one apartment; the other, the fear of increasing the impertinence of male servants, if the younger part of the family were permitted to mingle so much with them as a personal superintendence of the kitchen would expose them to do, especially where men cooks are employed. But the first objection will not hold good in a country mansion, and the second may be got rid of by a very beneficial change in domestic economy—in the dismissal of men cooks (the employment of whom is a silly custom copied from France), and the diminution of male servants in general, thereby saving many miserable females from a life of infamy and desolation, into which they may be forced from the impossibility of meeting with proper employment.

Having copied one silly custom of France, it were well if we could remedy the evil by the adoption of another custom which is evidently beneficial —we allude to a school established at *Ecouen*, near Paris, where every species of domestic economy and management is engrafted on the new system of tuition, without interfering with the useful, or even the ornamental parts of fashionable female education. But, if we hope to avail ourselves of the introduction of such a system into English education, we must instantly commence a reform in the lower regions, that is, of our own dwellings, and the kitchen must no longer be a *sanctum sanctorum*, into which even the mistress cannot enter without being considered as an impertinent intruder, and liable to the sauciness of those whose grand secret is to become the domestic tyrants, in whatever comes within the scope of their management.

But even under existing circumstances, if the kitchen is not a proper place for the young ladies

of the mansion to enter, the same objection will not lie against the confectionary, if it be in a convenient apartment, distinct from the absolute domestic offices, and only liable to the entrance of female servants. On that principle, then, we shall offer a few general hints for its management, which will ultimately be found conducive to economy in this part of the domestic duties.

In the first place, we recommend particular attention to the vessels intended either for the preparation or the preservation of the various preserves, pickles, &c. These ought invariably to be either of glass, or the coarse brown, or speckled stone-ware. The very best earthenware, especially the cream-coloured, is always glazed with a preparation which contains much of the oxyde of lead. This glazing will withstand the effects of any culinary heat that may be applied; but acids, even of preserved fruits, act upon it speedily, and decompose a slow but subtle poison. The same objection applies to its use in pickling; or indeed in any way where acids are made use of, or likely to arise from fermentation.

For boiling, then, let tin, iron, or glass be used; for preservation let the vessels be of glass or unglazed stone-ware.

Copper vessels are not quite so dangerous as leaden ones; but the constant labour and scouring requisite to keep them in a clean wholesome state, wear them out more than culinary use. But where copper vessels are indispensable, due attention, daily, to their cleanliness, will suffice to prevent any very dangerous accidents; and to that we would more willingly trust than to a mode recommended by a French economist, who declares that his method succeeded perfectly in preventing the accretion, or even the formation, of verdigrease

during a period of eight months. He describes his copper boiler as being twelve feet long and three wide, fitted on an economic stove. Its use was intended for the evaporation of vegetable syrups, marmalades, &c.; but its size made it difficult to be taken down, and it was placed in a damp under-ground story. All these circumstances operated against its good preservation; and rendered some permanent precaution necessary. This was performed in the following manner:— After being once used, and still warm, it was well cleaned out with a sponge and hot water, and as soon as it was nearly lukewarm, the whole interior surface was spread over with a coat of paste, made from potatoes diluted with water. This coat was suffered to dry before further use, and completely succeeded during eight months in preserving the copper from verdigrease, without any further trouble.

The only real objection to this mode is on the score of absolute cleanliness, which it must be difficult to preserve without processes that would rub off the coat of paste; but some may object that the colour of their preserves or pickles must be injured by want of the coppery tinge. This, however, is an error that must be carefully guarded against. All the artificial modes of colour are pernicious, and we must learn not to please our eyes at the expense of our health. We shall not go the length of an ingenious modern chemist upon this subject; not indeed because we think he has gone too far, but because we trust his book is now in so many families as to be permanently useful; at the same time we must not omit, whilst guarding our fair readers against artificial colours, to warn them also against the factitious flavours which it has long been too fashionable to give to our confectionary.

If almonds cannot be had conveniently, 'tis better that our custards and puddings should want the peculiar flavour imparted by them, than to have the poisonous cherry laurel substituted in their place. Indeed, a much more agreeable flavour than either almonds or the laurel can impart, may be produced by grated cocoa-nuts, which are now imported in such quantities as to be sufficiently cheap for any culinary purpose. In Virginia and the Southern States, a very favourite pudding is made, the principal part of which consists of the grated cocoa-nuts, with bread or flour, milk and eggs, and the other common ingredients of a pudding.

The chesnut, either of home or foreign growth, may also be applied to this purpose, with great propriety; certainly not to the extent of being a substitute for flour entirely, but in a proportion of one-half or two-thirds, in which case it might be used with safety even by the most phthisicky persons, without the inconvenience which it often produces when eaten raw: nay our common hazel nuts, or filberds, if carefully cleared of their outer coating, might be judiciously used for the same purpose.

Where the flavour of saffron is specially wished for, it ought to be used with great prudence, as it possesses strong medicinal powers. Its stimulative tendency to raise the spirits, formerly rendered it an approved remedy in hysterical cases, with considerable success, and it may certainly be used for culinary purposes in moderation; but perhaps the safest mode will be not to extend its use beyond the slight tinge of colour which a small quantity affords, and which will be fully sufficient to impart a flavour pleasing to the palate, without acting par-

ticularly as a stimulant. In purchasing it, the English saffron ought to have the preference.

Sugar is to the confectioner what gravy is to the cook—the very basis of all his excellence and fame. There is scarcely, indeed, any article in the consumption of a family in more daily use; and therefore the following hints relative to the purchase of it may not be unacceptable to our readers. The coarsest in quality, and consequently the cheapest in price, is far from being the cheapest in the end, as it is heavy, dirty, and of a very inferior degree of sweetness. That which is most refined is always the sweetest. White sugars should be chosen as shining, and as close in texture as possible. The best sort of brown has also a bright and gravelly look, and is often to be bought in its pure imported state. East India sugars appear finer in proportion to the price, but they do not contain so much saccharine matter, consequently they are less fit for wines and sweetmeats; though, when they are good of their sort, they do as well for common household purposes as any other.

The indiscriminate use of sugar, however, in confectionary, both in regard to health and economy, deserves some notice. That sugar possesses strong nutritious powers cannot be denied, especially before granulation (a fact proved by the fatness of the negroes in the West Indies during the cane-season, from eating the juice in the form of syrup; and even by the improved condition of the mill cattle, which are fed on the crushed canes): but we must not forget, that in its prepared state, perhaps principally owing to its impregnation with lime, sugar is pernicious both to the teeth and bowels. Reasoning from these facts then, we

should recommend the use of those fruits, in confectionary, which contain most sugar in their own composition, in preference to those which require sugar to make them palatable. It is not necessary to specify all the varieties; but we may notice the apple as that English fruit which, of all others, contains the greatest proportion of sugar; whence the addition of prepared sugar is almost unnecessary in the different preparations of the fruit, whether boiled, baked, or even in marmalade.

To have the sugar of the apple in perfection, however, it is necessary that the fruit should undergo culinary operation, or else a slight fermentation. A modern writer considers cyder as nothing more than sugared water, because the fermentation either neutralizes the malic acid, or, more properly speaking, combines it with the mucilage of the fruit, and thus forms the sugary compound. This may be exemplified by an easy experiment: Squeeze or press some apples which may have lain by for the winter: throw part of this juice into some milk, and it will produce curds in an instant; but if the remainder is boiled for about a quarter of an hour, it will unite with milk or cream without the slightest tendency to separate their constituent parts.

A few words on the shortest and cheapest method of preserving fruits must close this article. The grand secret is to deprive the fruit of its water of vegetation in the shortest time possible; for which purpose the fruit ought to be gathered just at the point of proper maturity.

An ingenious French writer considers fruit of all kinds as having four distinct periods of maturity—the maturity of *vegetation*, of *honeyfication*,

of *expectation*, and of *coction*. The first of these he considers as the period, when, having gone through the various vegetable processes up to the ripening, it appears ready to drop spontaneously. This, however, is a period which arrives sooner in the warm climate of France than in the colder orchards of England; but its absolute presence may be ascertained by the general filling out of the rind, by the bloom, by the smell, and by the facility with which it may be plucked from the branch. But even in France, as generally practised in England, this period may be hastened, either by cutting circularly through the outer rind at the foot of the branch, so as to prevent the return of the sap, or by bending the branch to a horizontal position on an espalier, which nearly answers the same purpose.

The second period, or that of *honeyfication*, consists in the ripeness and flavour which fruits of all kinds acquire, if plucked a few days before arriving at their first maturity, and preserved under a proper degree of temperature. Apples may acquire or arrive at this second degree of maturity upon the tree; but it too often happens that the flavour of the fruit is thus lost—for fruit over ripe is always found to have parted with a portion of its flavour.

The third stage, or of *expectation*, as the theorist quaintly terms it, is that which is acquired by pulpy fruits, which, though sufficiently ripe to drop off the tree, are yet, even then, hard and sour. This is the case with several kinds both of apples and pears, not to mention other fruits, which always improve after keeping in the confectionary—but with respect to the medlar and the

quince this maturity of expectation is absolutely necessary.

The fourth degree of maturity, or of *coction*, is completely artificial, and is nothing more or less than the change produced upon fruit by the aid of culinary heat.

We have already pointed out the first object necessary in the preservation of fruit—its maturity of vegetation; and we may apply the same principle to flowers or leaves gathered for use. The flowers ought to be gathered a day or two before the petals are ready to drop off spontaneously on the setting of the fruit; and the leaves must be plucked before the season has begun to rob them of their vegetable juices.

The degree of heat necessary for the purpose of drying must next be considered, as it differs considerably with respect to different substances. Flowers or aromatic plants require the smallest increase of heat beyond the temperature of the season, provided that season be genial; something more for rinds or roots; and a greater heat for fruits: but this heat must not be carried to excess. If the necessary heat for flowers be one, that for rinds or roots must be one and a quarter, that for fruits one and three quarters, or nearly double of what *one* may be above the freezing point.

The best method of ensuring the process is by a current of warm dry air; for damp is destructive. To warm the air, artificial heat may be applied, but the action of the sun-beams will always be sufficient for flowers; and it is injudicious to dry them in the shade, as thereby they lose their colour, and are apt to crack and shiver. With regard to fruits which require long drying, it must

be remembered that the night air is always hurtful to them, even in the dryest weather: they must therefore be sedulously protected from it; as in one damp night they will often acquire more humidity than they possessed at first.

The necessity of drying several kinds of fruit, previous to their application to useful purposes, depends upon that process actually giving them a degree of artificial ripeness which they would not otherwise acquire. This fact is proved by a simple, yet very curious and satisfactory experiment. Take a pound of fresh almonds; squeeze or press them, and scarcely a drop of oil will exude; but take another pound from the same tree, dry them judiciously, and they will yield nearly half their own weight!

Cold as well as heat may be applied to the preservation of fruit, and that too in a green state, through the winter. Let cherries, strawberries, raspberries, plums, peaches, or any other succulent fruit whatever, be put into a vessel somewhat like that used by common confectioners for freezing ice-creams, around which put salt and ice, exactly as they do. The fruit will soon be frozen, when it should be carried to the ice-house, and placed in a hole dug out in the centre of the ice, and over the top of the hole a quantity of powdered charcoal should be placed, secured by a common blanket. When the winter season arrives, the containing vessel may be opened, and the fruit taken out in its frozen state; then place it in cold water to thaw, and it will be found as delicious as when first gathered. When salt and ice, in the manner employed by the confectioners in general, shall be found inadequate to freeze some fruits hard enough, the mixture for producing an intense

cold, as spoken of by Chaptal, the celebrated French chemist, of salt, saltpetre, and glauber salts, will effectually freeze it very hard.

Chemistry also offers artificial means for the same purpose. We find, in a recent scientific work, that M. Dumont, in a letter to Count Chaptal, has announced the important practical discovery, that fruits may be preserved by means of carbonic gas. Cherries, grapes, pears, apples, and chesnuts, were placed in glass vessels, filled with carbonic gas, obtained from carbonate of lime by sulphuric acid. Neither the colour nor the taste of the cherries were altered at the end of fifteen days; and at the end of six weeks they were in the same state as if they had been preserved in brandy.

Intimately connected with this department of elegant housewifery is the

STILL-ROOM;

but we are well aware, that it is only in very large domestic establishments, or in the antique mansion of some rural Lady Bountiful, that an apartment is now dedicated to purposes of distillation. But to those who may choose to make their own rose-water or cordial compounds, it may be convenient to know that where there is sufficient space, a flat condenser, supplied judiciously with water, is much more powerful than the spiral worm, and more rapid in its condensation.

But there is even a more simple mode of distillation, which any one may try, and which depends upon the principle that the bladder of an ox, though actually pervious to water, has yet the property of retaining alcohol. The process founded upon this

is merely to put the liquid intended for distillation into a bladder, until half full. Close the orifice, and expose the bladder to the action of the sun, of the air, or the heat of a stove, when the watery particles will evaporate, and leave the spirituous part behind.

We must beg leave here to offer one important caution to all domestic chemists, in regard to the factitious flavours recommended in most books that treat of this branch, and which are often directed to be produced by substances which are highly deleterious.

The foreign papers have recently announced the death of a celebrated chemist of Vienna, named Schavinger, in consequence of having spilled upon his naked arm a quantity of prussic acid, which he was preparing, and which proved fatal in a few hours. It is well known to chemists that the principle of this acid (one of the most subtle poisons with which we are acquainted) exists in the leaves of the peach-tree, the wild laurel, the almond, and most of those which bear fruits with kernels. The late Duke Charles of Lorraine had nearly lost his life by swallowing a few drops of *Eau de Noyau* too highly impregnated. It is also generally known how dangerous it is to chew the leaves of the wild laurel. The odorous principle of the prussic acid is of the same nature, and a small quantity of it inhaled when the acid is in the state of gas, is sufficient to produce death without convulsions in a few seconds. A tea-spoonful of water or spirits, impregnated with a small quantity of this acid, will kill the largest dog. It is believed that the sudden death of Scheele, the celebrated Swedish chemist, while engaged in some experiments upon prussic

acid, was caused by the deleterious nature of the gas.

Those who have any regard for their own health or that of their friends, will scrupulously avoid, in their distillations and confectionary, the so often recommended leaves of the cherry-laurel.

Those who choose to prepare their own alcohol, may do so by a very easy and cheap mode; as they will find that ripe potatoe-apples, when they are plucked, mashed, and fermented with one-twentieth of a ferment, yield from distillation as much spirit as is obtained from the best grapes. Numerous experiments made in France with them, upon a large scale, leave no doubt respecting this valuble application of the plant.

The alcohol, thus prepared, may be tinted any colour, or impregnated with any particular flavour, that the domestic chemist may please, from wholesome materials.

This simple spirit will form a pleasing liqueur with cherries and sugar; but where cherry-brandy is preferred, we can recommend the following recipe with great confidence to our readers:—Stone six pounds of black cherries (guines); pour on them four quarts of the best brandy; bruise the stones in a mortar, and put the kernels in with the cherries; cover them close, and let the whole stand for a fortnight; then squeeze them clean from sediment, through muslin. Boil two pounds of very white sugar to clear syrup; mix it with the strained brandy, and bottle it into clear dry bottles. It may be used in two months, and should be kept in a cool cellar.

We are not very anxious to recommend the distillation of liqueurs as a private amusement, as it

may lead to disagreeable habits; but those who choose to practise it will find the heat of a sand bath quite sufficient for their purpose, when they use spirits that have been already distilled, first steeping in them the substances whose flavour they may wish to impart.

These substances may be cinnamon, mace, cloves, rose-leaves, lavender, orange-flowers, mignionette, &c.; to be sweetened afterwards, agreeably to the palate.

Marasquin may be made of the vinous spirit produced from a tartish kind of cherry, distilled with bay-leaves: this is wholesome.

Ratafia may be made different ways; one mode is to boil equal quantities of gooseberries and sugar into a thick jelly, over which a sufficient quantity of white wine must be poured, and suffered to remain for some days. Press out and filter the mixture, add half the quantity of brandy, with any spices that may be agreeable.

Even a simple mixture of one pint of brandy, one gallon of water, and a pound of sugar will, make a pleasant Ratafia, that may be flavoured at will, with any essential oil distilled in spirit. This Ratafia makes also a good basis for Noyau with apricot stones, which must be broken, the shells dried in the air, then powdered in a mortar, and steeped in brandy, exposed to the heat of the sun, or of a stove, in a bottle well-closed; taking care that the artificial heat is not too great, otherwise the bottle will burst.

The simplest and best, however, of all these recipes, is to put as much of the full blossom of the white thorn, picked dry and clean from the leaves and stalks, as a great bottle will hold

lightly, without pressing down: fill it up with French brandy, let it stand two or three months, then decant it off clear, and add as much sugar as may make it of a proper sweetness.

As *Noyau* is of all liqueurs that which seems the most generally adopted in England, we shall subjoin a recipe for the making of it, which will furnish sixteen clear quarts of a liqueur no way inferior to the *Veritable Martinique*, at an expense of not more than five pounds, which is not half the cost of the foreign article.

Blanch and pound one pound of bitter almonds, half a pound of sweet almonds, and two ounces of cassia buds, *separately*. Put them with two gallons of British gin into a barrel, and shake it every day for a fortnight. Then make a syrup of twelve pounds of sugar, and three quarts of water, and put it into the barrel milk-warm. Add three quarts of spirits of wine, a pint of ratafia, four ounces of orange-flower-water, the juice of two lemons, and a piece of calcined alum, about the size of a walnut. Shake the barrel occasionally for three or four days. Then add half an ounce of isinglass, dissolved in half a pint of gin, reserved from the two gallons for that purpose. Shake the barrel only once afterwards, let the whole remain three or four days, and then filter it through an earthenware cullender, with filtering paper laid on it, changing the paper every time it is empty. In two days and nights full sixteen clear quarts will be produced; when bottled, dip the corks in melted resin.

Under the head of *liqueurs*, though not strictly speaking of distillations, we may notice a beverage much talked of—the Regent's punch; of which

the composition is champaign, mixed with various liqueurs, with a small portion of an infusion of green tea, which contains the only water used in the mixture.

A very wholesome beverage, long used upon the Continent, yet never introduced here, is made from the leaves of the branc-ursine. A discretional quantity of the dried leaves are boiled in a sufficient quantity of common water, and, when the decoction assumes a yellowish colour, it is taken off; and a little leaven, made with rye-meal, being put into it, the vessel is well stopped and laid on a stove, in order that the liquor may ferment. When the fermentation is over, the liquor has an agreeable smell and a tartish taste; nothing more is wanting than to strain it through a woollen bag, and to keep it in a cool place for use. This beverage is exceedingly wholesome, and attended with excellent effects in cases of obstructions, intermitting fevers, &c.; some years ago, when it was kept a secret, the price was so exorbitant that few but persons of wealth or quality purchased it.

Here let us also notice, that ginger-beer of a very superior quality may be prepared as follows:—Powder of ginger, one ounce; cream of tartar, half an ounce; a large lemon sliced; two pounds of lump sugar, and one gallon of water, added together, and simmered over the fire for half an hour; then fermented, in the usual way, with a table spoonful of yeast: bottle it close for use. It should be put into such bottles as are used for soda water, and closely corked.

As vinegar forms such an important part of ornamental cookery, it must be always important to ascertain that it is unadulterated. The chemical

process is simple. In a test glass of vinegar put three or four drops of acetate of barytes, which will produce a white precipitate. Filtrate through paper, and heat the powder in a tobacco-pipe until red hot. Then put it into spirit of salt, or diluted aqua-fortis. If the precipitate dissolves, the vinegar is genuine. If it does not, then the vinegar is adulterated with oil of vitriol. If metallic adulteration is suspected, especially in distilled vinegar, take the following tests: add liquid ammonia to vinegar until its odour predominates; then if the mixture assumes a bluish tint, you may depend upon the presence of copper.

Again, add water, impregnated with sulphuretted hydrogen, to the suspected vinegar. If it becomes black, or yields a black precipitate, the presence of lead is obvious.

We shall dismiss this Section of Domestic Economy with some brief notice of the

ICE-HOUSE.

It will readily be admitted, that this branch of domestic arrangement has little to do with domestic economy, strictly speaking; yet, even where an ice-house is thought too expensive a part of the establishment, it may be agreeable to know the various modes of producing ice for culinary purposes, at a trifling expense, and with very little trouble.

One very simple and easy method is merely to fill a gallon stone bottle with hot spring water, leaving about a pint vacant, and putting in two

ounces of refined nitre; the bottle must then be stopped very close, and let down into a deep well. After three or four hours, it will be found to be completely frozen; but the bottle must be broken to procure the ice. If the bottle is moved up and down, so as to be sometimes in and sometimes out of the water, the consequent evaporation will hasten the process. The heating of the water assists the subsequent congelation; and it has been proved by experience, that hot water in winter will freeze more rapidly than cold water just drawn from a spring.

We have seen another plan proposed, which appears to be an easy, practical, and not very expensive mode of obtaining ice artificially. Equal parts of sal ammoniac and nitre, reduced together into powder, by solution in spring water, under proper management will produce cold sufficient, even in the hottest day in summer, to convert water into ice. The ice thus made may be used, as in the common process, with common salt, for freezing creams, &c. An appropriate vessel, containing the water to be frozen, is to be immersed in a larger vessel containing the above solution, and when the water is near freezing, stirred about so as to reduce it to a kind of thick snow broth, instead of allowing it to become a solid mass. The common salt is to be added to this, and the process conducted in the usual manner. The same powder will serve repeatedly for the same use by evaporation to dryness. The above process for freezing creams upon a large scale is more economical than by the direct effect of the mixture, consisting of sal ammoniac, &c. The addition of Glauber's salt, in powder, to the former, increases considerably its effect, but the

materials are not then recoverable for use by evaporation.

When the ice is thus procured, it may be increased in quantity by various processes. A very active and ingenious chemist, in a recent philosophical work, suggests that a very convenient and effective mixture for producing a diminution of sensible heat, which has hitherto escaped the attention of chemists, is that of snow and alcohol. The greatest effect takes place when equal weights of each are used, and the solution accomplished in the least possible time. The temperature both of the snow and alcohol being 30°, the solution in several experiments fell to 17° or 19° of Fahrenheit; but as the alcohol was not of a very low specific gravity, it is imagined that it would not be difficult to produce an additional degree. This circumstance explains the greater degree of cold generated by mixing snow with strong wines, than by plunging the containing vessel into ice and water; and the same effect may be produced by pounded ice as by snow.

An easy chemical process, when necessary to be had recourse to, will produce a degree of cold sufficient even to congeal mercury, or reduce the gaseous nitrous acid to a liquid form.

This process is simply to mix together sulphuric ether and muriatic ether, when an instantaneous evaporation takes place.

Some experiments have been tried in making ice by absorption, in which several substances have been used, particularly rotten trap, or toad-stone. Very recently, however, the ingenious Professor Leslie, of Edinburgh, has communicated an improvement in his method of producing ice. He

has discovered that parched oatmeal has a stronger and more extensive power of absorbing humidity than even decayed trap rock. With about three quarters of a pound of meal, occupying a surface of seven inches in diameter, he froze nearly a quarter of a pound of water, and kept it almost twenty hours in the form of ice, till one-half of the congealed mass was again melted.

An easily practicable plan for a portable ice-house has also been proposed by a scientific Frenchman, M. Belenger, which may be rendered cheaply convenient for domestic purposes.

Take an iron-bound butt or puncheon, and knock out the head, cutting a very small hole in the bottom, about the size of a wine-cork. Place inside of it a wooden tub, shaped like a churn, resting it upon two pieces of wood, which are to raise it from touching the bottom. Fill the space round the inner tub with pounded charcoal; and fit to the tub a cover, with a convenient handle, having inside one or two small hooks, on which are to be hung the bottles, during the operation. Place on the lid a bag of charcoal, about two feet square: if the charcoal in this bag is pounded, it will answer better; and, over all, place another cover, which must cover the head of the outer cask.

When the apparatus is thus prepared, let it be placed in a cold cellar, and buried in the earth above four-fifths of its height; but, though cold, the cellar must be dry: wet ground will not answer, and a sandy soil is the best. Fill the inner tub, or nearly so, with pounded ice; or, if prepared in winter, with snow well pressed down, and the apparatus will be complete.

Whenever it is wished to make ices, take off the upper cover, then the sack or bag of pounded charcoal, and suspend the vessel containing the liquid to be frozen to the hooks inside of the inner cover: then close up the whole. as before, for half an hour, when the operation will be complete, provided proper care is taken to exclude external air.

SECTION V.

STORE OFFICES.

COAL CELLAR—*Management of Coals—Qualities of Coals — Economic Management of Heat.*
BEER CELLAR—*Home Brewing — Materials and Substitutes—Management of Ale and Beer.*
WINE CELLAR — *Choice of Wines — Tests—Tricks —General Management—Made Wines.*
SPIRIT CELLAR.

COAL CELLAR.

THERE is no part of domestic economy which every body professes to understand better than the management of a fire, and yet there is no branch in the household arrangement where there is a greater proportional and unnecessary waste than arises from ignorance and mismanagement in this article. It is an old adage, that we must stir no man's fire until we have known him seven years; but we might find it equally prudent if we were careful as to the stirring of our own. Any body, indeed, can take up a poker and toss the coals about; but that is not *stirring a fire!*

In short, the use of a poker applies solely to two particular points – the opening of a dying fire, so as to admit the free passage of the air *into* it, and sometimes, but not always, *through* it – or else approximating the remains of a half-burned fire, so as to concentrate the heat, whilst the parts still ignited are opened to the atmosphere.

The same observation may apply to the use of a pair of bellows, the mere blowing of which, at random, nine times out of ten will fail; the force of the current of air sometimes blowing out the fire as it is called, that is, carrying off the caloric too rapidly, and at others, directing the warmed current from the unignited fuel, instead of into it. To prove this, let any person sit down with a pair of bellows to a fire only partially ignited, or partially extinguished; let him blow, at first, not into the burning part, but into the dead coals close to it, so that the air may partly extend to the burning coal. After a few blasts let the bellows blow into the burning fuel, but directing the stream partly towards the dead coal; it will then be found that the ignition will extend much more rapidly than under the common method of blowing furiously into the flame at random.

The reason of this, both in regard to the poker and the bellows, is, that fire cannot exist without the presence of atmospheric air, seventeen parts in one hundred of which are pure oxygen, which forms the *pabulum* or food of fire, in addition to its own combustible qualities. It is on the same principle that water is thrown on the forge fire, in order that the existing heat shall produce decomposition; when its component particles, oxygen and hydrogen, both become combustible, and increase the ignition; just as a little water

sprinkled on a parlour fire appears to increase the smoke, whilst it unites the small coals, and prevents the atmospheric air, from the draught of the apartment, from passing through before its oxygen has been decomposed by the fire, adding its own oxygen and hydrogen to the amount, as well as its own caloric, which is by no means inconsiderable.

With these principles in view, we may now proceed to a more practical illustration of the subject, the first point being the qualities of the material, of which there is a great choice in the London market; amounting to upwards of sixty species, from the mere bituminous slate, up to the brilliant Cannel coal. For common use, in London, however, we recommend the best of the sea-coal, which is generally supposed to be from the Walls-end Colliery, which comes by the Newcastle ships, and contains a sufficient quantity of bitumen, mixed with purer materials than any other species, thus affording heat and possessing durability. According to the present system, indeed, the consumer is quite at the mercy of the coal merchant; but if instead of ordering a large supply at once, he will, at first, content himself with a sample, he may with very little trouble ascertain who will deal fairly with him; and, if he wisely pays ready money, he will be independent of his coal merchant —a situation which few families, even in genteel life, can boast of. Indeed we cannot too often repeat the truth, that to deal for ready money only, in all the departments of domestic arrangement, is the truest economy. He who gives credit hopes to secure custom by having a hold upon you in his books; and continues always to make up for his advance, either by an advanced price, or an in-

ferior article; whilst the ready-money dealer knows that your custom can only be secured by a fair article.

There is, likewise, another consideration, as far as economy is concerned, which is not only to buy with ready money, but to buy at proper seasons, for there is with every article a cheap season, and a dear one; and with none more than coals: insomuch that the master of a family, who fills his coal-cellar in the middle of the summer, rather than the beginning of the winter, will find it filled at half the expense it would otherwise cost him.

In dealing with an honest coal-merchant, there can be no reason to expect fraud; yet there may be tricks on the part of his people, or of the lighterman, which must be guarded against in respect to measure. To illustrate this it will be sufficient to state, that coals measured into a lighter may be wonderfully increased in quantity, by a little management. What is called a "room" of coals in a lighter, is calculated to contain five chaldrons and a quarter, and ought to fill no more than sixty-eight sacks precisely; yet out of this quantity ninety sacks may be produced with a little ingenuity: and the only way to prevent it, is to pass the coals from the "room" to a *measure* and *thence* into the sack.

We must now call to the recollection of our readers, that chimnies often smoke, and that coals are often wasted, by throwing too much fuel at once upon a fire. To prove this observation, it is only necessary to remove the superfluous coal from the top of the grate, when the smoking instantly ceases: as to the waste, that evidently proceeds from the frequent intemperate and injudicious use of the poker, which not only throws a great

portion of the small coals among the cinders, but often extinguishes the fire it was intended to foster.

The philosophy of the matter is simply this. When the heat begins to operate, the gas is extricated, and carrying some of the grosser particles along with it, a heavy smoke is thrown up, which will not rise in the chimney, and by its own gravity is forced back into the room, on which the warm air of the apartment, being lighter than what comes in, instantly ascends towards the ceiling, and the lower part becomes cool. But if a portion of the fuel is taken off, then the small quantity of active caloric acts with greater force on the unconsumed coal, brings out its latent heat more rapidly, and, thereby producing a quicker decomposition of the gases by the increasing combustion, the smoke becomes thinner and lighter, and though it carries up certainly more caloric with it proportionably than before, yet the quantity of radiant heat is greater, and the general temperature of the apartment is more equalized.

Taking off the superabundant fuel has also the advantage of permitting a freer draught through the fire, and of course presents a greater quantity of atmospheric oxygen as food for combustion, rendering a poker almost useless. In short, a few minutes patience will do more for a fire than stirring and knocking the coals about for half an hour. The true secret is, that stirring a fire is only necessary to keep the bottom clear, except when the top absolutely requires breaking, or rather perforation only.

Attention to these hints will save nearly one-third of the coal expenditure;—certainly an impor-

tant object not only in London house-keeping, but in all parts of the empire.

With a little care the expenditure of coals, even in a kitchen-grate, ought not to exceed two bushels weekly per grate; but the summer months reducing the general average, five chaldron annually will be a very fair allowance for a moderate sized family.

We may add that although a well acting chimney carries up a greater portion of caloric than a smoky one in the same period of time, yet it does not diminish the active heat of the fire, but rather increases it; for as a smaller quantity of coals is in the grate, so a greater proportion of that quantity is in active combustion, throwing out more radiant heat, and burning until nothing is left but a mere *caput mortuum*. It is true that there will be fewer cinders, and that these will be the less serviceable than under other circumstances; but then the quantity of coals consumed will be much less in proportion. According to this method too, the warm air of the apartment is prevented from rushing up the chimney before it has passed through the fire—an arrangement which we attempt to produce artificially by the application of a tin blower, or register.

These hints apply both to parlour and kitchen fires; but with respect to the latter, if it were facile to make cooks practical philosophers, it ought to be explained to them that when water is once made to boil, all that is further necessary, is just to keep the water at that temperature, which Count Rumford has proved, by repeated experiments, to require a very minute, though frequent addition of fuel. Meat will thus be as well boiled,

and in the same time; with this advantage that a smaller quantity of the water will be evaporated: and less additional water to fill up, being thus required, the fire consequently will not so often demand copious additions of fuel—to say nothing of the injury done to the meat by the frequent dashing in of cold water.

It has been ascertained that 100lbs. of beef may be kept boiling hot for three hours, by means of 2½lbs. of pit coal in a confined place, so prepared as to prevent the radiating of the heat, except in the direction required, and at an expence of about three farthings, when coals are 4*l*. per chaldron.

When fuel was comparatively cheap, this saving might not be considered as of high importance; nor is it easily practicable in England to make great savings in fuel, whilst rounds and sirloins are boiled and roasted. But in small families there is less economy in cooking a large joint in one day to last for seven, than there would be in smaller dishes, cooked as in the warmer climates, in both the East and West Indies, and even in Spain and Italy: where, according to the national mode of cooking, less fire is consumed in dressing a large dinner than an English cook-maid will require to boil a tea-kettle. Even in both the Indies, the native cooks contrive to dress English dinners with a smaller consumption of fuel, than beef-steaks for half a dozen can be cooked at home.

The steam-cooking is also another important saving in domestic economy; though at first the preparatory expense is considerable. With many indeed there exist strong prejudices against meat thus dressed; but that may be obviated in large establishments, when by a very simple process the steam may be applied, not to the meat itself, but

to the warming of the water in which the meat is boiled. The practice of heating water in this manner by steam is now becoming general in breweries and in large manufactories, such as dyeing houses, &c., and even on a small scale might be made convenient for private families at a moderate expense; requiring, indeed, rather more patience and attention than English cooks are disposed to bestow upon economical practices.

On turning over the various philosophical repositories of the present day, we find that many attempts have been made of late to preserve an uniform temperature in breweries and distilleries, by confining the warmth to substances which are bad conductors of heat. The cement invented for this purpose by Mr. Kurten, the architect at Wiesbaden, has been highly commended. It is stated to have the property of concentrating in stoves, and especially the economic stoves, almost all the heat, so that it is expended only upon the things to be heated, and never in vain. The Polytechnic Society at Munich, which has lately analysed this cement, finds that it is indeed useful, but however, not so advantageous as the inventor supposed. According to the analysis of this Society, Mr. Kurten's cement consists of earthy marl, sand, and ochre.

We may here conclude, by hinting that much saving would take place from paying more attention to the sifting of cinders and mixing them for use with small coal. A patent has lately been obtained for an improved apparatus for this purpose. It consists of a bin, or box, containing a sieve suspended upon swinging pivots: this is moved in a manner similar to the sieves of winnowing machines, by the intervention of a crank connected with the handle;

and its motion may be regulated by a fly-wheel There is a contrivance, by means of a sliding lever and handle, to discharge the contents of the sieve, after it has been sifted, into a scuttle placed beneath; and by this means the operator is protected from all the dust which naturally arises. By the mode practised in Wales in preparing coal for the hearth, the quantity is doubly increased; and the fire lasts thrice as long as it would if made of coal alone. It is as follows:—To every bushel of small coal (the smaller the better) add one bushel of clay, or river mud, mix them intimately together with some water to soften the clay, then form this mass into small balls, about twice the size of a hen's egg. According to the state of the weather, the balls are fit for use in from six to twelve hours. A fire made with these balls throws out a regular, ardent, intense heat, and if made with clay will burn eighteen hours, but if with mud about twelve hours; so that, by this mode of preparation, a bushel of coal will last as long as four consumed in the usual way. There is another advantage, as small coal, the very refuse of the coal-hole, answers best: this it is presumed, may be purchased at a lower price than coal in general.

The economy of the

BEER AND ALE-CELLAR

is an object of necessary attention even in small establishments, the expenditure of malt liquors costing more in proportion than almost any other article of common demand in housekeeping. It will therefore be more important to point out, from modern discoveries and recent practice, the

best mode of applying the various articles of water, malt, and hops, so as to produce the greatest quantity of the best article at the smallest expense; to describe some lighter substitutes for table-beverage; and to show how far chemistry may prevent the waste resulting from liquors spoiled by accident or inattention.

In choice of water, always select that which is softest. This offers a three-fold saving—in time, in coals, and in malt; as it operates sooner, and with less heat, besides extracting a much greater proportion of the essence of the malt. It is true that it leaves less extractive matter for a second brewing; but, as it permits a diminution of malt in the first mash, the operator can afford to add fresh malt to the second brewing, which will always improve it in flavour as well as in quality.

Though March and October have long been the two great brewing eras in old English house-keeping, yet a considerable saving will be found to accrue from brewing small quantities at a time, and brewing often; nay, if the great brewing in each of these months be divided into several, the advantages resulting will be found to counter-balance the additional trouble.

It has recently been proved by actual comparative experiments, that as small brewings allow the malt to be boiled in the infusion, with the hops and wort prepared in the usual way, so is the beer always stronger and better. The process is to make the usual infusion for the wort, during a steeping of three hours: then, putting in the hops, to boil the whole together for three-quarters of an hour, straining it afterwards, and proceeding in the ordinary way for working. One important

improvement has recently been patented, which offers a complete safe-guard against an accident that often spoils a whole mash.

The mode is this:—the patentee had observed that, in the common way of boiling the wort, the extract is often, if not always, more or less burned; to prevent which, he never suffers fire or flame to come in contact with the vessel in which the wort is boiled, but performs that process by means of steam, applied on the outside of that vessel. For this purpose he incloses the brewing-vessel in another vessel called the case or jacket, made either of metal or wood, with a sufficient space left between them for the admission of steam from a boiler, by means of tubes, or other convenient communication. In arranging this simple apparatus, attention should be paid to the following particulars:—the brewing-vessel must be so well secured in its case, that there may be no way for the steam to escape, but through a valve or cock. The brewing-vessel should rise somewhat higher than the case, as it is not advisable to apply the steam to that vessel higher than the worts within it rise to, as some portions of the hop are apt to adhere to the sides of the vessel, and these, if exposed to a greater heat than the worts, might injure the flavour of the beer. The boiler which supplies the steam should be furnished with a steam-valve, and placed somewhat lower than the brewing-vessel; so that the water produced by the condensation of the steam in the case may be returned to the boiler by a tube. The tube which connects the boiler and the case should be furnished with cocks, that the steam may be excluded or admitted at pleasure. By employing a close brewing-vessel with a safety-valve, the temperature

of the wort may be raised above the common boiling temperature of 212°, and a larger portion of extract may thus be obtained from the hop. The flavour of the beer thus brewed is represented as superior to that boiled in the common way, and as being, when properly fermented, more vinous, spirituous, and palatable.

It ought also to be remembered, that the brown malts yields less extractive matter, or gives weaker wort, than the pale malt; in consequence of certain principles being destroyed by the more powerful actions of the fire upon the grain. It will be found beneficial always to steep the hops, before using, in soft hot water; after which boil the hops, and the infusion must be poured into the mash previous to the general boiling.

Gentian-root may be used with complete success as a substitute for hops in brewing, in the proportion of one ounce, or one ounce and a half, to four ounces of hops for each bushel of malt. The root may be bought at about three-halfpence per ounce, which produces an effect equal to a pound of hops. It is cut into thin slices, and put into boiling wort, as hops are; but if previously boiled in water, the bitter principle, which is more grateful than that of the hop, will be extracted with greater certainty. A small quantity of hops thrown into the cask when bunged down, will impart the full flavour of the latter.

It is also known that one pound of buckbean will bitter one strike of malt for fresh drink, and give it a very agreeable flavour. The roots only, in the season, are as good as the leaves in the month of June.

Various substitutes have been offered for malt liquors, but these, however, may be found in any

book of recipes; but, as a ready light summer drink, we may recommend the mixing a bottle of ale or porter in ten quarts of water, adding a pound of coarse brown sugar, and two ounces of ground ginger. This is not exactly ginger-beer; but if well mixed, then bottled and corked loosely, it will be found fit for drinking, and forming an agreeable beverage in a day or two afterwards, particularly in hot weather.

To those who have vines in their gardens or conservatories, it may be agreeable to know that their vine-prunings, either fresh or dry, when mashed in hot water, yield a very fine beer; and if the infusion be permitted to ferment, it will be found to make very good wholesome vinegar.

Considerable ingenuity and fancy have been displayed in producing beer with the flavour of various flowers, plants, and shrubs, but with much unnecessary expense of time, fire, and trouble. It will be found much better, and equally agreeable, to bottle off strong ale in its pure state, leaving the space of about three table-spoonfuls, into which may be poured the extract of any fruit or flower, &c. made strong or weak as wanted. These extracts may even be added after the ale has ripened, by being dropped in after the cork is drawn for immediate use.

The following recipe will be found to produce a very pleasant and wholesome beverage. To a quarter of a peck of sweet wheat bran, add three handfuls of hops, and ten gallons of water. Boil the whole together in a copper, until the bran and hops sink to the bottom: then strain it through a hair-sieve into a cooler, and, when luke-warm, add two quarts of molasses, or three pints of treacle if

thick. This will be sufficient for a nine-gallon cask. Before you pour in the liquor, which must be done as soon as the molasses or treacle is melted, put two table-spoonfuls of good yeast into the barrel. When the fermentation has subsided, bung the cask close up, and in four days it will be fit to use. If you should choose to bottle any part of the beer, it will be much improved by so doing, and will be ready to drink in six or seven days.

To make any attempt to ripen beer before the proper time of its own chemical confection, is a dangerous experiment, as it often spoils a good cask; but, where it is particularly wished for, it will be found that the proportion of twenty drops of spirit of salt to a gallon of beer or ale, will take off the newness, or extra sweetness, correcting it also when it is either too stale or eager.

Where it is intended to keep beer for any time on draught, it will be prudent to take ground malt in the proportion of one pint to every twenty gallons of the cask's contents; enclose it in a small linen bag, hang it in the cask as soon as broached, but keep the bung well closed, never opening it but for the purpose of lowering the bag, as the beer sinks from expenditure.

When beer turns ropy, without being sour, it may readily be restored by mixing one spoonful of mustard to every fourteen gallons, in a little of the beer, which is to be poured into the bung-hole; and in the course of the ensuing day the beer will be fit for use.

But when it is actually sour, it may be restored by hanging a linen bag in the cask, containing equal quantities of pounded chalk and calcined oyster-shells. This will operate successfully in the course

of a day and night; or for immediate use apply salt of wormwood, or a small quantity of carbonate of soda.

These articles form the base of all the advertised specifics for this purpose.

When beer is first tunned, it may be improved by putting a handful of coarse oatmeal into each barrel.

This may be applied with propriety to beer *purchased* in casks, if not intended for immediate use. But where beer is intended to be kept, it is the safest way to have it home-brewed, as its absolute strength is then known and can be depended upon. Where circumstances, however, prevent this, a simple test of its powers may be found in mixing a little pure alcohol in a small quantity of the beer. If the beer be not well fermented, and possess more mucilage than spirit, it will immediately become turbid; which clearly manifests that it will turn sour long before the period proposed for bottling, or for draught.

We now come to a more expensive, though perhaps not more important, department of domestic store, in the

WINE-CELLAR,

and we shall divide this interesting portion of our work into the separate heads of choice of wine; testing of wine; tricks of wine-coopers; management of wine in cellar, in wood, and in bottles:—and close with some novel and cheap modes of preparing home-made wines; confining ourselves, however, to short hints upon each division.

As the goodness of wine, especially in a medical point of view, depends upon the quantity of astrin-

gent matter, or *tannin*, contained in it; this may readily be ascertained by dropping a solution of isinglass into it, when a gelatinous precipitate takes place in proportion to the tannin, whether it be port, claret, or burgundy.

Let every purchaser of port-wine, however, recollect, that even when he gets wine that is really unadulterated, still it is extremely probable that half his pipe consists of a rough Spanish wine; wholesome indeed, but by no means equal to the real port, either in strength, in body, or in flavour.

As to adulteration and substitution in other kinds of wine, we shall mention but one instance in regard to hock, or the wine of Hochheim, whose eight acres of vineyard contain about 32,000 vine plants, which are valued at as many ducats. It produces twelve large casks of wine annually, which sell at about 150*l.* each. This is the veritable hock; but much of the adjoining country produces its substitute: and, no doubt, many other countries also find substitutes, when we consider the quantity of hock, so called, drunk in England alone, and in her colonies.

Wine that is really genuine will at once speak for itself, and show that no chemical test is necessary; but where there is cause to suspect adulteration, then it is proper to examine it more accurately.

The presence of sugar of lead may be detected by filling a wine glass, and adding a few drops of Harrogate water, when the wine will become blackish, if lead has been infused to correct acidity: or use the common chemical test of water impregnated with sulphuretted hydrogen gas, and a small portion of muriatic acid, filling a glass

about one-third, and the rest with the wine to be tested. If a black precipitate falls, it is lead: which may be easily proved by the common experiment of the blow-pipe.

The most frequent adulteration of port wine is with alum, in order to give it astringency when mixed with lighter-bodied wines. The process to detect this is simple. Take some fresh prepared lime water, mix the suspected wine with it, in any fair proportion; allow the mixture to stand about a day; then, if the wine is genuine, a number of crystals will be found deposited at the bottom of the vessel; if alum is in the wine, there will be no crystals, but a slimy and muddy precipitate.

The lime water need not be very strong. The proportions of lime water and wine may be equal.

There is another way of ascertaining the presence of alum, but more scientific. Drop some solution of sub-carbonate of potash into the wine, when, if alum be present, there will be a violet-coloured precipitate, or at least cloudiness; which will vanish again if a few drops of caustic potash, or of muriatic acid, are added to the mixture.

The very indifferent flavour of inferior wines is too often caused by the use of a strong spirit; but whenever any suspicion arises with regard to the artificial strength of wine, the addition of brandy may be ascertained, by putting the wine in a water-bath, till it approaches the temperature of boiling water; when, should there be any brandy, it will get over, while the wine's own individual spirit remains, as no wine gives out its spirit at a less heat.

Where colouring matter has been added to the wine, put a quarter of a pint into a small phial

with an ounce of fresh charcoal finely pulverized. Shake the mixture well for a few minutes, when the natural colouring matter will be chemically destroyed, and the wine when filtered will yield a clear limpid fluid; but if the wine is artificially coloured, that colouring matter cannot be acted on by the charcoal, and the mixture will appear unchanged.

Wine-coopers know too well that a little Brazil-wood saw-dust mixed with some natron or impure carbonate of soda, and put into a tumbler of water, immediately communicates to it the colour and appearance of red wine; but if this coloured fluid is poured into another glass containing a few drops of lemon juice, it instantly loses its colour and becomes like white wine.

It is also important to notice that none of the substances used in giving the red colour to wine, form with the acetate of lead that greenish grey precipitate which is the result of its union with genuine red wines. When coloured by bilberry, Campeachy wood, or elder, the precipitate is deep blue; and when with fernambouc, red saunders, or red beet, the precipitate is red.

It is needless here to enumerate the various tricks for giving a factitious crusting to wine bottles, by means of Brazil wood and potash; or the colouring of wine corks to represent long residence in the neck of a bottle, though perhaps only driven in yesterday; nor the crusting even of the wine casks, with crystals of the super tartrite of potash. Those who wish to know those secrets will find them fully explained in Accum's work, with many other "Secrets worth Knowing;" but we may observe that, the older port wine is, the less of the tartar, or super tartrite of potash, is contained in

it, and the greater the deposition on the sides of the cask or bottle. But new wine may be put into old casks or old bottles. Therefore, to ascertain the quantity of the salt, take a pint of wine, and boil it down to one-half, into which drop a solution of muriate of platina; when a precipitate takes place, greater or less, in proportion to the quantity of the salt contained.

In choosing, or in forming a wine cellar, remember that the deepest are the best; yet they cannot have too much air, provided it comes through air holes with a northern aspect. They ought also to be as far as possible from *all drains*, as much good wine has often been spoiled by inattention to this circumstance. Both casks and bottles ought to be so arranged as to admit of a free circulation of air. This prevents the rotting of hoops, and very often saves a cask of old wine.

Where wine is intended to be kept in casks for years, considerable advantage will be derived from painting them with a coat of oil and any common ochre; sprinkling over it, whilst wet, some very fine sand, adding a second coat of oil and sand, which forms a complete stony encrustation against damp or dry rot.

It is positively averred, that to pour oil on wine when in the cask will prevent it from turning musty; but if wine in the wood turns musty or sour, put a quantity of clean wheat in a linen bag, and hang it in the cask. In a short time the wine is fined, and may be drawn off the lees into a clean cask.

Nothing can be more injurious to young wines than to hasten them in colour or in flavour, whether by things in themselves harmless, or by the

deleterious ingredients too often used by wine-coopers.

But then let it be remembered, that the natural ripening of wine will be always impeded in proportion to the irregularity of temperature in the cellar.

An ingenious person, a few years ago, endeavoured to procure a patent for ripening Madeira and other wines. The effect was to be produced by the casks being kept in a regular temperature and state of motion, similar to that which they would experience during a voyage. The scheme had much of plausibility in it; but, like many other schemes devised for the benefit of society, it fell to the ground for want of pecuniary means to carry it into execution.

For the clearing of turbid wine, chips of hazel are a harmless, and generally an efficacious remedy; but where a more rapid clarification is necessary, then powdered gypsum or alabaster may safely be tried, stirring it up in the wine, which, after settling, must be drawn off into a fresh cask.

Here we may hint at a mode of ripening claret, even in bottle, which is very much practised in France, and may be practised here without injury to the health; though we certainly are far from recommending the practice to the venders of wine, however it may be adopted in a private cellar.

The process is to operate upon wine perhaps only a year in bottle. Draw the corks, and pour about a glassful out of each, re-corking them tightly; then place the wine, thus drawn, in an oven, suffering it, at the end of an hour or two, to

cool gradually. Draw the corks again, and fill up the bottles, which must be carefully replaced in the cellar; and in a day or two the wine will have every appearance of being ten years old.

Before wine is drawn off into a fresh cask, it will always be proper to dip a rag into melted brimstone, and to insert it as far as the centre of the cask by means of a wire, stopping up the bung-hole after it is set on fire. The reason for this may be shown by a curious experiment.

If two or three drops of the oil of tartar are poured into half a glass of very fine red wine, the wine will lose its red colour, and become opaque and yellowish, like turned and pricked wine; but if two or three drops of the spirit of sulphur, which is a very strong acid, are afterwards poured into the glass, the same wine will entirely resume its beautiful red colour: whence the reason is easily perceived, why sulphur is burnt in hogs-heads, in order to preserve wine, since it is not the inflammable part of sulphur that causes this effect, but its acid spirit, that enters and permeates the wood of the vessel.

Naturalists seem not yet agreed on the reasons why vehement thunder disturbs wine, and other liquors in cellars, and makes them become vapid or acid. Some think that the tremulous motion of the air occasions this alteration; and others, that there is a certain occult fermentation in the air, that disturbs and corrupts the usual motion of insensible parts. The latter opinion is held to be the more probable by Mr. Boyle, who, by hermetically sealing a glass vessel filled with beer, found that this liquor, after great thunder, lost nothing of its strength and taste; whereas the same in

hogsheads becoming sour, the exhalation diffused through the air must have penetrated the hogsheads, but not the glass. Whence he advises, in time of thunder, to light coal-fires in vaults and cellars, which, he says, will preserve liquors from corruption; either because the fire discusses the sulphureous and corrupting vapours, or that it breaks their force, whilst it changes the figures of the vapours, or their magnitude or texture.

With respect to wine in bottles, it is now ascertained, that the dry rot, however injurious to others, is of great advantage to wine-merchants, as it soon covers the bottles with its mouldy appearance, and consumes the external parts of the corks; so that with a trifling operation on the bottles after they are filled, and then deposited in cellars pretty strongly affected with the dry rot, they can send out wine as having been bottled for seven or eight years, before it has, in fact, been there so many months.

This, however, can be of no advantage in a private cellar; and therefore we record a better plan than even corking wine to preserve it, nay to improve it materially in quality, though with a diminution of quantity whilst in bottle.

It is well known that water passes with facility through animal substances, such as bladders, &c. whilst alcohol is almost perfectly retained by them, as already noticed under another head. To apply this principle, close wine bottles with pieces of bladder instead of cork, and after some time the wine will be found diminished in quantity, but its strength will be much improved.

To guard against "corked wine," dip the corks in a size made of white wax melted with half its

quantity of beef suet; let them dry rapidly, and repeat the dipping until their outsides are saturated.

Here we must offer a caution as to cleaning bottles in the usual mode with shot. The plan is certainly efficacious for removing the tartrite of potash which encrusts their sides; but as careless servants will often leave some of the shot sticking in the bottle, there is danger of the lead and arsenic contained in them being dissolved, whence a strong and dangerous poison is speedily formed.

To guard against this, the bottles ought to be carefully inspected after washing; the shot ought to be large; and it may be well to *weigh* the shot before use and afterwards.

Various methods are in vogue for cooling wine: it is enough here to record that it has been found that equal weights of alcohol and mace, rapidly mixed, produce a diminution of temperature from 32 to 17. This explains the reason why a small quantity of mace mixed with a strong wine produces more cold than if the wine be merely plunged in mace water.

Some writers are actually of opinion, that home-made wines, or wines made from fruit, are more wholesome than those made from the grape, because the latter are said to contain saline principles injurious to health; whilst the former have for their basis, the salubrious juice of fruit, whose slight acid may be changed, by repeated boiling, into saccharine matter. But there is another cause of difference—that grape wine contains the tartaric acid, whilst the acid of fruit wines is the malic, and which is imparted to excess by the pressure and boiling of the seeds and husks.

As the great quantity of sugar required to correct this overplus affects the flavour of the home-made wines, it has been proposed to remedy that defect by the addition of the super-tartrite of potash.

Of this acid there is a portion in the gooseberry; and gooseberry wine, of a most excellent flavour, may be made, by a very simple process, so as even to pass with the best judges for a fine foreign wine.

For this purpose, to every two gallons of full ripe gooseberries mashed, add an equal quantity of soft water, milk-warm, holding in solution one pound of single refined sugar. Stir up the whole quantity in a tub, and cover with a blanket, to preserve the heat of fermentation. Stir frequently for three days, then strain, first through a sieve, and, secondly, through a coarse cloth; the liquor must then be put into a cask, kept full, and allowed to ferment from ten days to three weeks; when two or three bottles of brandy, or more, according to the size of the cask, in proportion of one to eight, may be poured in with the same quantity of sherry, together with a small quantity of isinglass perfectly dissolved in water.

Close the cask tightly. If at the end of a fortnight it is not sweet enough, add more sugar. Close finally for six months, and then bottle; or sooner, if it is wished to imitate sparkling champagne.

To make a wine nearly equal to the Rhenish, you must to every gallon of the juice of the apple, immediately after it comes from the press, add two pounds of common loaf sugar; boil it as long as any scum rises; strain it through a sieve, and let it cool; add some good yeast, and stir it

well; let it work in the tub for two or three weeks, or till the head begins to flatten, then skim off the head, draw it clear off, and tun it. When made a year, rack it off, and fine it with isinglass; then add half a pint of the best rectified spirits of wine, or a pint of brandy to every three gallons. This wine will be found very superior.

For a fine currant wine, take black currants, red ditto, white ditto, ripe cherries, raspberries, and strawberries, of each an equal quantity. To every four pounds, well bruised, add one gallon of clear soft water. Steep three days and nights in open vessels, and stir the mass frequently. Then strain through a sieve, and press the pulp to dryness. Add together both liquids. To each gallon put three pounds of good rich moist sugar. Let the whole stand three days, skim off the top, and stir frequently. Tun it into casks, to purge at the bung, for about a fortnight; then to every nine gallons add a quart of good brandy, and close the casks. Isinglass finings may be applied, if necessary.

Advantage may also be taken of the prodigious yielding qualities of the Turkey red or black raisins, which will produce a grateful and healthy beverage, at the trifling cost of about nine pence per bottle, to be made in their own houses, at any season of the year, under the direction of our fair countrywomen, as it is then subject to no tax. The process is very simple. To make 20 gallons, take 100lbs. of raisins, pick off the stalks, chop them grossly, and put them into an open vessel, more wide than deep; put 13 gallons of water to them, and let them stand 15 days, stirring them well daily: then strain and press them, putting aside the liquor that flows from them; add 7 gallons of

water to the raisins which have thus been pressed, and let it stand for a week, frequently stirring them as before directed; then press off the liquor, add to it what is first collected, putting both runnings into the vessel, together with one quart of brandy. When the liquor in the barrel has done singing, stop it close, and let it stand till fit to be bottled.

But of all home-made wines, that which may be procured from the mulberry, is most congenial to the palates and constitutions of Englishmen; and it is much to be regretted that the mulberry-tree is not more cultivated in this country; as the soil and climate are so favourable to it, that in the course of a very few years, half the consumption of the United Kingdom might be supplied by this means, at the cheapest possible rate, with a pure, delicious, and salutary wine, free alike from foreign matters, and from foreign duties.

Dr. Mac Culloch, in his Remarks on the Art of making Wine, reprobates the practice of adding alcohol or brandy to wines, either home-made or foreign, under the idea of making them keep longer. He contends, that to this practice, as applied to port wine, the frequency of liver complaints in this country must be attributed; and insists, from various experiments, that the notion of the preservative power of spirits, when added to wine, is founded on error.

We can state, from our own knowledge, that some of the finest flavoured, and strongest bodied made-wines we ever met with were made without any addition whatever of brandy; and the excellence they had attained from age, was a sufficient proof that it was not necessary merely to enable them to keep. Time is a very good economist on some occasions, however destructive he may be on

others; and, if left to himself, will often perform for nothing, what, by endeavouring to hasten his operations, must be gained at considerable expense.

As to the expenditure of wine, every one must regulate for themselves; but let it be remembered, that the richest man need not be ashamed to be his own butler. The supply of servants' tables with wine is an increasing evil that ought to be resisted; inasmuch as it is too often an incentive to the worst crimes—first, to theft when in place; and too often to more extended robberies when out. What indeed can be expected from a poor ignorant fellow, pampered with wine and idleness, and suddenly thrown upon his own resources by a loss of situation? Besides, let the master recollect, that where wine is allowed, the best is generally to be found at the second table. A beneficial regulation on this subject might be adopted by the use of a small cellar, or an open binn, (the others being locked,) in which the week's expenditure may be regularly put under the care of the butler.

Before closing this part of the subject, we may add a few words in regard to the

SPIRIT CELLAR.

In which department, however, there is but little room for novelty, except to inform our readers, that *new rum* is much improved in flavour by steeping in it a small quantity of ground rice and charcoal for about a fortnight; frequently stirring it, then allowing it to settle for decanting, and, where the quantity is not very great, filtering it

through paper: and that new brandy may be made equal to old, by pouring four or five drops of volatile alkali to every quart, shaking it well, and then allowing it to settle.

That spirits are too often adulterated will not be denied. Whenever suspicion exists, the presence of aqua-fortis or oil of vitriol can easily be detected by the following simple process:—Take a small bit of chalk (carbonate of lime) about half the size of a white pea, and drop it into a glass containing the spirits to be examined. If it contains this spurious compound, the chalk will be torn to pieces by the action of the two acids, and the whole liquid will assume the appearance of milk, but, if genuine, the chalk will lie undissolved at the bottom without any alteration of its colour.

Cyder and perry afford little that is not generally known respecting them, except to recommend their use in preference to the sophisticated stuff so often a disgrace to the very name of wine, the dearness of which, at present, acts as a severe check upon those who would administer it charitably in their various neighbourhoods. Indeed, unless it is genuine, we must agree with the physician who recommended *poison in preference*, as acting more rapidly, and therefore more humanely. We have lately, in this country, been taught to seek for substitutes for the necessaries of life. Prohibited the use of port wine, we would, therefore, recommend cyder to the poor, when attacked by the low contagious fever; but not luscious, sweet cyder, such as is usually sold at our inns, or is to be found in the cellars of the merchants; for this has generally been adulterated, and mixed with we know not what, to render it agreeable to the

palate. The best cyder for cases of fever and sore throat is the natural produce of apples, such as the farmers of Herefordshire keep for the entertainment of their friends; which they call rough and stout; in opposition to the soft and luscious sorts that are made to adapt themselves to the taste. Such home-made cyder, we are sure, is genuine; has no mixture in it of acid spirit, as most of our wines have; and is quite as strong an antiseptic. If perry be used instead of cyder, the same attention should be had to its quality. The best sorts of perry for such uses are those called by the several names, Caradine, Houghcap, and Barland.

We shall now conclude generally, that it is most important for health, to be able to ascertain the purity of cyder, or perry, before stocking a cellar with them. The principal adulteration of these liquors is lead; either accidentally, from the leaden bed of the press, or intentionally, for the purpose of neutralizing the superabundant acid.

To ascertain this, nothing more is necessary than to test the suspected liquor with a solution of molybdate of potash; when a white precipitate will take place, even though the lead should exist in the smallest possible quantity.

The purity of spirits may easily be ascertained by setting fire to a little of it in a spoon, when, if it be unadulterated, it will all burn away, without leaving any moisture behind.

SECTION VI.

EXTERNAL CONVENIENCES.

KITCHEN-GARDEN — ORCHARD — FLOWER-GARDEN — APIARY — POULTRY YARD — PIGGERY — FARM YARD — ORNAMENTAL GROUNDS — CONSERVATORY — HOT HOUSE — AVIARY — IMPROVEMENTS.

KITCHEN-GARDEN.

THIS is one of the most important parts of general domestic economy, whenever the situation of a house will permit a family to avail themselves of its assistance, in aid of butchers' bills. It is, indeed, much to be regretted, that small plots of ground, in the immediate vicinity of the metropolis more especially, are too often frittered away into shrubberies and baby-gardens, when they might more usefully be employed in raising vegetables for the family during the week-day residence in town, than wasting their sweetness on the smoky air, in all the pride of lilac, hollyhock, and bachelors' buttons, to be merely smelled to by the whole emigrating household on the day of rest.

With a little care and attention, a kitchen-garden, though small, might be rendered not only useful, but, in fact, as ornamental as a modern grass carpet; and the same expense incurred to make the ground a labyrinth of sweets, might suffice to render it agreeable to the palate, as well as to the olfactory nerves, and that even without offending the most delicate optics from Snowhill or St. Mary Axe.

It is one objection to the adoption of a kitchen-garden in front of the dwelling, or in sight of the family apartments, that its very nature makes it rather an eye-sore, than otherwise, at all seasons. This, however, is an objection that may be readily got over, by a little attention to neatness and good order: whilst the plants themselves, if judiciously attended to, and the borders sown or planted with ranunculus, polyanthus, mignionette, &c. in succession, will really be ornamental: but then, in cutting the plants for use, the business must be done neatly, all useless leaves cleared from the ground, the roots no longer wanted taken up, and the ravages of insects guarded against by sedulous extirpation.

It will also be found a great improvement, where space will admit of it, to surround the beds with neat espaliers, with fruit trees, or even gooseberry and currant bushes trained along them, instead of these being suffered to grow in a state of ragged wildness.

One great difficulty, however, is to preserve the plants from the ravages of insects and vermin; as their depredations too often render the utmost care and neatness totally useless.

It has lately been satisfactorily proved that the ammoniacal liquor, produced in the manufacture

of gas from coal, will effectually extirpate the grub and other worms, which so often destroy the rising hopes of the gardener, particularly in early crops: nor is any harm to be feared from the liquid injuring the tenderest plants, as they appear rather to be invigorated by its application. The water in which potatoes are boiled, will likewise, as elsewhere observed, if sprinkled over grain or plants, completely destroy all insects in every stage of existence, from the egg to the fly.

Many specifics have been offered, as infallible in getting rid of moles; but absolute extirpation is the only certain remedy. To do this, however, does not require the aid of a professed mole-catcher; as the secret by means of which they succeed in driving these vermin from their holes, so as to be killed easily by proper weapons or by dogs, is now known. It has often been observed, that moles will not attack garlick, onions, or leeks, whilst growing; and their antipathy to them is so great, that if any of these, particularly in a green state approaching to ripeness, are put into their holes, they will immediately leave them, and expose themselves to be taken. The leaves of the elder-tree will also have the same effect.

Though ponds in gardens are seldom objects of beauty, in consequence of the quantity of aquatic weeds with which they are generally overrun, yet they may be kept in good order, when large enough, by means of swans, two of which will be sufficient for an extensive piece of water when once thoroughly cleared. Nor will this interfere with the breeding or keeping of fish, provided rushes and grass are encouraged to grow about the sides; and which, with a little care, may be made even ornamental. That a moderate-sized pond may soon be stocked

with carp, is evident from the fact, that a single fish has been known to contain between three and four hundred thousand eggs.

It remains for us now to offer some new discoveries in regard to the economic culture of several hortulan productions, which we shall notice in alphabetic order, for more ready reference ; but without pretending to give any thing like general directions for a kitchen-garden, which must be sought for in appropriate treatises.

The first of these which we shall select, is a cheap and easy way to raise *Asparagus*.—Make the bed quite flat, five feet wide, of good soil, without any dung, long or short ; sow it with onions—then sow two asparagus seeds (lest one should fail) about one inch deep near each other ; twelve inches each way sow two more ; and if the spring is cold and dry, let the weeds grow until rain comes. In October cover the bed with manure or rotten hot-bed. The next spring remove the weakest of the two plants, and keep the bed from weeds. Samples have been sent to the Horticultural Society cut the third year, and very large. To raise seed, select the largest stems ; after blossoming sufficiently, take off the tops to make the seed strong. This is also the best way to raise double ten week and Brompton stock —six pods are sufficient for any strong plant ; setting them to flower near double ones is of no use. The excess in petal arises from cultivation, and transplanting into rich soil. Wild flowers are seldom double. Keep all small seeds in the pod until they are sown.

Beet-root, though considered injurious to the stomach when eaten to any extent, is yet a very useful and economic plant, independently of its choice for salads ; as it has been proved capable of

making very good beer, in lieu of malt. This, of course, depends in a great degree upon its saccharine qualities; and the process is to submit it previously to sufficient pressure so as to get rid of nearly all the juice, when it may immediately be applied to the purpose of malt, or dried and kept to a proper season. It is unfortunate, however, that a considerable portion of its sugar is expressed along with the juice, which, under strong pressure, will amount to nearly half the weight of the root itself, yielding nearly one-tenth of its own weight of sugar after evaporation. But to evaporate the juice for a saccharine supply, would be futile in the extreme; yet it may be expedient to boil it down considerably, and then to mix the residue with the beet malt, by which means nothing will be lost.

As the *Cauliflower* is, in general, early out of season, the following mode of preserving it, as detailed by an intelligent horticulturist, may prove acceptable. He says, "In 1808, I had a large quantity of this vegetable in full head in the beginning of November. Being at a loss for a shed, I dug a pit along the bottom of a wall, about eighteen inches in depth, and much about the same breadth. One day I pulled up the stocks of cauliflower, keeping the leaves as entire as possible and lapping them round the flower. I began at one end of the above-mentioned pit, laying in my cauliflower with the roots uppermost, and the tops inclining downwards, the roots of the one layer covering the tops of the other, and so on with the whole of my stock. The pits were then covered closely up with earth, in order that the rain might run off. It is to be observed, that the covering had a considerable slope from the wall. The experiment succeeded to my wish; and I was able

occasionally to give a dish of fine cauliflower till the middle of January 1819."

The culture of the *Cucumber* scarcely comes within our province, except to offer a hint respecting a point on which common foresight might readily be negligent; nor should we venture to record it, were it not that the fact has been already clearly ascertained.

As this plant cannot be well raised here except in hot-beds, or under glass, attempts have been made to concentrate the Sun's rays upon them, by means of copper sheet reflectors. This, however, has been ascertained to render the plants reared by them completely deleterious, even to the loss of life. It is not impossible that the rain water and dew dripping from these reflectors may have aided much in the unhappy consequences; but, in whatever way the morbific action may have taken place, it would be the height of imprudence to adopt, or to prolong a practice, the results of which have been fatal in more than one instance.

There is a wild plant which might, with great propriety and advantage, be introduced more frequently into our smaller kitchen-gardens. We allude to the *Sea kale*, which in taste much resembles asparagus, and is dressed and served up in the same manner. It makes its appearance very early in the year, viz. in February and March, and does not begin to fail till the month of May, so that asparagus is as it were a continuation of it. It is, in botanical works, designated as the *Crambe maritima*, and is found wild upon the sea shore in divers parts of England, particularly in Sussex and Dorsetshire. It is found also upon the southern coast of Devonshire, where it shoots itself up among the sands.

The best mode for general cultivation is, that it should be propagated either by seeds or roots; if the former, it should not be cut till the third or fourth year; if the latter, i. e. by transplanting, it will be fit for use the second year. The seed must be sown very thick, and remain in the seed-bed one year; the roots are then to be taken up, and transplanted at the distance of a foot from each other, which space they will soon fill up; indeed this plant propagates itself so fast, that we may almost say it is with difficulty eradicated. It should however be covered during the winter with long dung, to preserve it from the frost. When exposed to the air, it turns green, and then is not fit for the table: for the space, therefore, of ten or twelve days previous to its being cut for use, it must undergo the process of blanching: which is done by burying it, during that time, in coal ashes or sand.

But there is another species of Kale, the *Cæsarian kale*, which must not pass unnoticed; and it is to be expected that this valuable and most excellent vegetable will soon rank high, both in cultivation and esteem, there being no species of vegetable in this country resembling this prolific plant.

It must be sown in spring or the beginning of summer, broad cast, and transplanted at the distance of about two feet. When sown with turnips, it answers an admirable purpose, as few crops are more subject to fail than that of the turnip, whereas the Cæsarian kale seed may be depended on. It is so prolific and hardy, that it will vegetate well in almost any soil or climate, and prosper even in the shade of fruit or other trees. The farmer, grazier, dairy-man, kitchen gardener, &c.

would find it greatly to their advantage to grow this beneficial plant, as well as families living in towns, and who find it difficult to procure sufficient pasture and meadow for a cow: as it has been ascertained that during the winter, particularly in severe frosts and deep snows, when other green fodder for cattle cannot be had, this plant, from its elevation (growing to four or five feet) and its natural hardiness, yields abundant and successive supplies, which is an important desideratum. The mode of using it for cattle is by cutting off the large leaves as wanted, when a regular succession takes place continually through the winter. Very early in the spring (previous to most other vegetables,) it produces vast numbers of large delicious sprouts for the table, equal in sweetness to asparagus; so that it may be said to produce two crops. Cows fed on this plant give a greater quantity of milk, and the butter is of a richer flavour than when fed on any other vegetable. A matter also of great utility is that of its comforting and cheering qualities in the feeding of ewes in the winter, while suckling house lambs.

With respect to *Kidney Beans*, considerable economic improvement may now be expected, as an ingenious botanist has discovered that both the common and dwarf kidney-bean (*Phaseolus vulgaris* and *Phaseolus nanus*,) as well as the common garden bean (*Faba vicia*) and all its varieties, hitherto considered by botanists as annual plants, are in reality perennials. If they are cut down in the autumn before the appearance of sharp frosts, and the roots covered with stable litter, they will shoot up again in spring; and though the pods do not come to maturity so early in the second and succeeding years, yet the crop is not so liable to be

injured by the vicissitudes of the weather as that of fresh-sown plants.

Onions have recently been much improved by a simple and facile process; as by an experiment carefully tried, it was found that if some were transplanted early in March, whilst the remainder were left in the original bed, the transplanted bulbs, in a ripe state, exceeded the others more than three-fold, both in size and weight. Half a dozen onions treated in this manner were found to weigh eight pounds and a quarter. Their shape was flattish; and in flavour they were as mild as the best Portuguese or Spanish. A new method has also been introduced of producing an earlier crop than usual. If onions are sown about Midsummer, a crop of bulbs will be obtained of the size of a small horse-bean. These, on being transplanted early in the next spring, will not run to seed, but produce an earlier and more certain crop of fine large bulbs in the following season. The Americans practise this mode of sowing onions with much success. Dibble the small bulbs singly in rows about three inches apart, or a little more.

But above all things we wish to see the greatest possible encouragement given to the culture of the *Potatoe*. One acre for one year will support twenty persons, including women and children; and leave sufficient for the feeding of one or two pigs. That its produce must be great, is evident from the fact, that the farmers in Essex, with their high-rented, well manured, and dearly worked lands, including cartage and various incidental expenses, have been able, in good years, to sell them at three shillings or four shillings the cwt. in the London markets: that is to say, five or six pounds

of good food for twopence. In fact, the produce per acre has been thirteen tons on a moderate average.

It may also not be inappropriate to mention that two crops of potatoes may be raised instead of one. Potatoes were set on the twenty-eighth of March, and taken up on the twenty-fourth of June; then cut and set again on the twenty-sixth, in the same spot of ground with only the addition of a little lime. On the twenty-eighth of October they were again taken up, and yielded a more plentiful crop than the summer produce. It may likewise be observed in this place, that in some lands, but not however in light or stony lands, (for the rule does not apply invariably,) by taking off the blossoms just when they are beginning to unfold, the produce of the roots will be increased in almost double the quantity.

It has been proved by experiment that cutting out the eyes will answer as well as planting the potatoes cut in pieces; and it is ascertained that the top eyes will always be the earliest, whilst the cutting of them out will not injure the potatoe as to keeping for other uses. The eyes of large potatoes always produce the best crops, and the largest-sized potatoes. Potatoes, carefully managed, have recently produced roots weighing one pound and a half each; but these are certainly fitter for farm-yard uses than for the dinner-table.

Scarcity of manure has, indeed, sometimes been urged as a reason for the neglect of this useful root. But that may easily be got over; for, whenever manure is difficult to be procured, it will be found fully sufficient, even in light soils, to plant them a good distance asunder, and give

three ploughings between. By such culture the potatoe crop will pay for the land; but the produce of an acre may be much increased by a judicious intermixture of other plants, especially if we introduce a new sort of potatoe, called the bread-fruit-potatoe, which, from its uncommon productiveness, is getting rapidly into estimation. A farmer near Bridgewater planted in the common way, in a heavy soil, without manure, or any extra attention, two potatoes of that variety, weighing four ounces; the produce was 264 ounces, being an increase per acre (allowing six sacks to be the proper quantity to seed an acre) of 396 sacks. Heligoland beans may be cultivated with the bread-fruit-potatoe with success, by dropping about half a bushel per acre in the channels with the potatoes when planted; as they grow and ripen at the same time, without deteriorating the crop of potatoes.

Nor are its esculent uses the only advantage to be drawn from the cultivation of the potatoe. An ingenious French chemist has obtained a new and very lucrative product from potatoes, by burning the stalks and leaves of the plant and extracting the potash, which they contain in abundance.—Just when the flower begins to go off, at which time the stalk is in full vigour, the plants are cut with a sharp instrument about five inches from the ground. The stumps soon throw out fresh shoots, which suffice to bring the roots to maturity. The plants, after being cut, are left eight days in the field to dry. They are then burned in the same manner as soda manufacturers burn kali, in a hole five feet in diameter and two feet deep. The ashes are washed and the ley evaporated. By this process 2,500 pounds weight of the salt is obtained

per acre; the author of it calculates that the potatoes grown upon an acre will produce 225 francs, over and above the expense of cultivation; and that the salt from the same area, deducting the cost of making, will be worth 816 francs, making a total of 1041 francs, upwards of 43*l.* sterling.

Many experiments have recently been tried to obtain new potatoes throughout the winter. Three of these modes have been so successful, that we shall record them; giving, however, the precedence to the invention of a very ingenious lady* of Chester, for which she has most deservedly obtained the gold medal from the Society of Arts. Her mode she describes to be, to prepare a proper quantity of red sand, rather of a loamy nature, and to mix it up with a portion of lime in powder, viz. about one-third or one-half, about fourteen days before use. This soil is to be spread about three inches thick at the bottom of any old wooden box, or on a very dry brick cellar floor. The cellar ought not to be exposed to the frost, nor yet too much confined from the air. Then procure a measure or two of large potatoes of a prior year's growth: the best sorts are the red apple potatoe, the pink eyes, or Mr. Curwen's purple potatoes. Set these on the soil whole, about three inches apart, with the crown or the principal eye to the soil in preference, but put no soil over them.

It is a matter of some importance, that the original potatoes for planting whole for sets in September, should be such as were of perfect growth in the October of the preceding year, and well preserved during the winter; the sprouts which

* Miss Anne Clague.

shoot from them should be removed by the end of April, and these sprouts, which will be from six to twenty inches long, may be planted, with all their fibres, in a garden for a first crop. About June 15th, the potatoe sets must be sprit again, and the sprouts planted for a second crop; and in September the potatoe sets must be sprit a third time, and the sprouts of this last produce thrown away as useless. At the end of September the original or seed potatoe is to be gently placed on the soils as before-mentioned, for a Christmas crop. At the end of three months at farthest the old potatoes should be carefully twisted from the new ones, and the sprouts taken off the old potatoe; and the old potatoe is then to be placed on its bottom or side, on a fresh bed of soil prepared as before, and left to produce another crop from fresh eyes placed next the soil; as we are to observe that the old potatoe should not be set or placed twice on the same side, and we must take care at that time to remove the sprouts, to prevent the moisture rotting the old potatoe. By the above method, this lady had four crops of new potatoes from one potatoe, exclusive of those produced from the sprouts planted in the garden in April and June, from which she obtained two crops of well-grown potatoes in September and October weighing from eight to twelve ounces each: and the crops were very plentiful in proportion to the quantity planted.

We have reason to believe no method of raising early potatoes will be found more cheap and easy in management than this; the potatoes are remarkably well flavoured, and may be kept longer without injury after gathering, before dressed, than potatoes grown in the natural ground.

Another method has been proposed, which is thus.—Take some dry vegetable mould, cover the bottom of a large box, about two inches thick, then lay potatoes of the kind (and the largest of their kind) called ox-nobles (chiefly used for cattle) side by side, so as to cover the mould; then cover these with two inches more mould, and so on for four or five courses. The box may stand covered with dry straw in any warm cellar. If this plan be adopted in the month of November, a very large supply of beautiful young potatoes will be obtained very soon after Christmas, and the potatoes may be repeated so as to have a succession till the season produces them in the natural way.

The last mode which we shall record is to preserve some fine kidney potatoes, as long through the summer as possible, and by keeping them cool, and rubbing off the sprouts, they may be kept sufficiently fresh to vegetate till late in July, or the beginning of August; then plant them with manure in the usual way, but closer, each set within six inches of the other, and in rows twelve or fourteen inches asunder. The shavings of grass plats are preferable to manure. These potatoes will grow very rapidly, and, when the October frosts come, the young ones at the roots will be about the ordinary size of the early Lancashire ones. If at this time, as soon as the tops are withered by the frost, the beds are carefully covered with long litter, or dry straw, and if the soil be not much infested by the grub, they will remain unaltered till Christmas, and may be used in the highest perfection for more than two months from that time; and even then the only alteration perceptible is in the thickness of the

skin, which the cook will find it necessary to scrape off, and which a little destroys their beauty.

Having thus shewn how to procure new potatoes out of season, it may be proper to state the various methods lately made public of preserving the old ones; amongst which it is a very curious fact, that potatoes may be kept good all the year, by dipping them in boiling water, as the Scots preserve eggs by killing the living principle; and as the germ is so near the skin, it would not hurt the potatoe. One minute, or two at most, would be quite sufficient. This would be of great use for ship-stores. In an open worked basket a ton may be cured in an hour; after which they must be dried in a cooling-oven, and laid up in sacks in a dry place, secure from the effects of frost.

An ingenious method of preserving potatoes has been practised, which is not only agreeable, but also economical. The mode is to peel the potatoes and rasp them, placing the pulp in a coarse cloth, which is squeezed in a common napkin-press, until it becomes a thin cake, like thin cheese, when it is laid on a shelf to dry, and afterwards boiled or steamed as wanted.

The expressed juice, if mixed with an equal quantity of cold water, will yield a considerable portion of fine flour, very applicable to pastry and other culinary purposes.

Many different methods have been proposed for bringing back frosted potatoes to a sound state, but we have not learned that any of them have completely answered. Steeping in cold water is only a partial remedy; for the difference of temperature is considerable, and it is well known that in vegetables, as well as in animals, the putrefactive process rapidly commences by a sudden

transition to heat from extreme cold. Mr. Wilfred Wilson, of Cumberland, has convinced himself, from numerous observations and inquiries, that if potatoes, how much soever frosted, be only carefully excluded from the atmospheric air, and the pit not opened until some time after the frost has entirely subsided, these valuable roots will be found not to have sustained the slightest injury, on account of their not having been exposed to a sudden change, and consequently thawing gradually. The truth of this must be obvious to every ploughman, who, in tilling the ground in the spring, often turns up potatoes, which, when boiled, prove perfectly good, though they must have been several times alternately frozen and thawed. Their preservation must certainly be owing to their having been protected from the external air by the incumbent earth.

Strawberries are among the most agreeable articles in private gardening; and may be made much more so, both in horticultural appearance, and in quality, by the revival of a mode of management, now almost obsolete.

This mode is to lay straw neatly arranged under the plants as soon as the fruit begins to swell. There is no doubt indeed that this custom was the real origin of their name, with us, though their appellations in foreign languages have no reference to it whatever.

The advantages of this method are considerable. It preserves an extensive crop; shades the roots from the sun; prevents the want of moisture by evaporation; keeps the fruit off the ground; and gives a most pleasing air of neatness and cleanliness, which is always agreeable to the eye. Let it be remembered too, that even in very dry seasons

it nearly saves the whole labour of watering; and that at the end of the season the straw makes excellent manure.

To preserve vegetables in general from frost, will always be necessary in our winters; but vegetables slightly touched by frost ought not hastily to be thrown away, as in that case they may be rendered perfectly palatable and nutritious by laying them in cold water for an hour before boiling, and putting a piece of saltpetre into the kettle when set on the fire. A piece of lime the size of an egg, put into the water in which potatoes are boiling, will likewise be found to have the effect of rendering the heaviest potatoes light and farinaceous.

Turnips, or other vegetables saved during the winter, and injured by frost, may always be recovered with ease by putting their roots into cold water when a thaw appears; and letting them remain there until they are freed from all nitrous spiculæ, which the air, by its activity, would agitate into a thaw with such violence as to lacerate the substance of the root, reducing it to a soft pulp or liquid.

A most ingenious way of preserving vegetables all the winter, particularly green peas and French beans, has recently been discovered; by filling a middle-sized stew-pan with young peas, for instance, into which must be put two or three tablespoonfuls of sugar, and the stew-pan then set over a brisk charcoal fire. When the heat begins to act, stir up the peas two or three times; then, as soon as they begin to yield water, pour them out into a dish to drain. Spread them out on paper in an airy place, not exposed to the sun, and turn them frequently so as to dry rapidly. Guard

them from moisture, and you may have them green at Christmas without expense, and with very little trouble.

We have also read that spring-water boiled with salt into a strong brine until it will float an egg, may be made conducive to the preservation of the tenderest vegetables; which must be laid carefully in an earthen vessel, of a tall shape, and with as small an opening as convenient for the hand. This vessel is then to be carefully stopped up, and set in a cool dry place; but the vegetables, when wanted for use, must be steeped in warm water, where they are to lie for about six hours, after which they may be boiled, tasting agreeably, and preserving a good colour.

Little remains now, except to notice some useful hints regarding the best mode of gathering vegetables in the garden, and which is really a true part of domestic economy.

As even with artificial heat, melons do not always ripen equally, the upper part being fit for eating, whilst that next to the foot-stalk may be intolerably bitter, it will often be judicious not to allow them to ripen entirely in any part before gathering, but to cut them off and lay them on wicker-work in a green-house, or common summer-house; or in a cooler place if the weather should be very hot, so as not to ripen or *mellow* too rapidly. In a short time it will be found that the melon will have twice the goodness and flavour that it would have acquired if permitted to remain upon the stalk.

This process depends upon a species of fermentation produced by alternate changes in temperature; but, though beneficial to almost all fruits, it is a process highly destructive of the principle

of vegetable health in all the other productions of the garden, which ought never to be gathered, if possible, until the moment they are wanted.

We have recently seen a curious account of a subterraneous garden, formed at the bottom of the Percy Main Pit, Newcastle, by the furnace-keeper, which was communicated at the last quarterly meeting of the Caledonian Horticultural Society. The plants are formed in the bottom of the mine, by the light and radiant heat of an open stove, constantly maintained for the sake of ventilation. The same valuable work throws out a hint worthy the notice of residents in all the coal districts, where it describes an extensive natural hot-bed, near Dudley, Staffordshire, which is heated by means of the slow combustion of coal at some depth below the surface. From this natural hot-bed, a gardener raises annually crops of different kinds of culinary vegetables, which are earlier by some weeks than those in surrounding gardens.

To step from the kitchen-garden to the

ORCHARD,

is literally so much in point that any introduction is superfluous; indeed, the numerous publications on this subject render all observations unnecessary, beyond the insertion of such useful facts as we have been able to find recorded on good authority in the scientific publications of the day. And even with regard to these, our attention shall be paid as much to the management of the fruit itself, as to the culture of the trees; a department more particularly claiming the attention of our fair readers, whose practical gardening seldom extends beyond the parterre or green-house.

Of wall-fruit we shall only observe in this place, that the ripening of it may be greatly facilitated by having the walls covered, previous to the trees being trained against it, with a thick coat of black paint. Mr. H. Dawes, of Slough, near Windsor, tried the experiment with respect to a vine, and found that the weight of grapes gathered on the blackened part of the wall was 20 pounds 10 ounces; whilst the other part yielded only 7 pounds 1 ounce; being little more than a third of the other. The fruit on the blackened part of the wall was also much finer and riper, and in larger bunches than on the other part: and the wood of the vine was stronger, and more covered with leaves, on that part of the wall where the paint had been applied.

In regard to specific fruits, we select the gooseberry and the grape; of the former of which it is to be observed, that it may be much improved by a process that will not only give it an unusual degree of richness and flavour, but also preserve it fresh on the bush until the frosts set in.

The mode is to cover the bush with a light straw thatch, a few days before perfect ripeness; so as to exclude not only the sun-beams and showers, and dew, but even the light itself.

Gooseberries will also be improved by adopting the espalier system, so as to fix every branch horizontally and at equal distances from each other; to effect which, there must be provided a quantity of hooked and forked sticks two feet long and upwards, made of the young shoots of hazel, elder, or any kind of wood that will not strike root. The *forks* are to *support* such shoots as have an inclination downwards; and those shoots must be fastened to their respective forks by soft woollen

bandages; otherwise, when they have produced wo or three long shoots each in the ensuing summer, they will be blown off them, unless such newly-formed shoots be themselves secured, as they ought to be, by forks or poles, &c. When the trees have extended four feet from the stem, their branches ought to be turned up, and each of them fastened to a hoop made of cleft hazel, ash, willow, or brambles disarmed of their prickles, and spliced together, if too short, to make a circle large enough to give the trees when finished the form of a *punch-bowl* rather than a *goblet;* for the greater the horizontality of the branches, the better in all respects, save that of gathering the fruit: but that is a very minor consideration in comparison with the attendant advantages.

The Vine is not merely an ornamental plant in this country; it may also be made useful, independent of its fruit. Its leaves, if dried in the shade, make an excellent beer. They will also make vinegar. The prunings, on being bruised, and put into a vat or mashing-tub, with boiling water poured over them like malt, produce a liquor of a fine vinous quality, which, if fermented, forms good beer; or, distilled, yields brandy.

The value of the vine may be ascertained from the fact that a single plant, growing against the front of the hotel at Tetbury, Worcestershire, produced a crop of grapes calculated to be worth 60*l.* a-year at market price.

There is a method of treating grapes in France which might be practised with great success in England, and would form an elegant addition to the amusements of the green-house.

Have earthen garden-pots made with a notch in the side, and extending half across the bottom.

Lay in that notch a vine branch after the fruit has been fully formed, bending the branch just so much as to break it slightly, close to the bottom of the pot. Fill the pot with good earth, which must be judiciously and carefully watered; fix it on a stand, and leave it to nature.

The fruit thus treated will be found to surpass the others in size, but it ripens more slowly: in fact, it must be allowed thus to remain until the approach of frost; when the branch must be cut, and the pot carried into the green-house; from whence, even in winter, ripe grapes may thus be set upon the table; and the effect will be more curious if the pots themselves are brought in, with the fruit growing, in the midst of the dessert.

This practice has the additional advantage, that the vine-branch, in the spring, may be planted with success as a new vine: for it will be found full of sap, the bending or breaking of the branch, in the first instance, having had the effect of stopping the descent of the sap, as well as forming shoots or radical tendrils at the base.

It has been recently ascertained that fruit-trees are much improved by peeling off the outer bark, when it shows a tendency to exfoliation.

The advantages are, that it increases the quantity and improves the quality of the fruit, even at a rate of more than double; it makes barren trees productive; it prevents some diseases, and cures others; it cures the canker; and it dislodges an immense number of insects.

Apple and pear trees may be peeled in winter, when the inner bark adheres most strictly to the trunk; but cherry-trees in summer.

The reason of this is, that we thus give assistance to nature. An accurate observer will per-

ceive that, sooner or later in the season, or in its age, every tree will exfoliate. It is best done in winter, because then the inmost bark adheres most strongly to the wood; but with care, it may be done at any time. Indeed, to young trees and small branches, it is best in March and April, when the sap is rising.

When apple and pear trees become apparently barren, it is too common to consider them as hopeless. This, however, is injudicious: for it has been proved by actual experiment, that trees which had remained five or six years without bearing, have been restored to fertility by the simple operation of making an incision all round the bottom of the trunk, right through the bark, and even deep into the tree itself.

Even single branches have thus been restored to fertility, whilst the rest of the tree remained barren; the branch itself alone being cut nearly through.

The best mode of performing this operation is to form two circular incisions with a penknife about a quarter of an inch asunder, and then to make a vertical incision between the two circles, when the bark will readily peel off. The principle on which this is supposed to act is, that the sap ascends by the inner bark, but descends by the outer; but the incision stops the descent, and therefore gives that branch a greater power of retaining the sap than it possessed before.

With respect to *grafting*, we have to observe that a common method is to make a transverse section in the back of the stock, and a perpendicular slit below it; the bud is then pushed down, to give it the position which it is to have. This method is not always successful; it is better to

reverse it, by making the vertical slit above the transverse section, and pushing the bud upwards into its position—a method which rarely fails of success; because as the sap descends by the bark, as has been ascertained, and does not ascend, the bud thus placed above the transverse section receives abundance, but, when placed below, the sap cannot reach it.

Here let us recommend a greater attention to the culture of the chesnut-tree, than is at present paid by practical gardeners. It is now scarcely thought of as an orchard-tree; yet will be found a very useful one. But those who wish to have this fruit in perfection should procure grafts from such trees as produce good fruit, and graft them on young chesnut-stocks; by which method they may continue the kind, and the trees will be more fruitful than those which are ungrafted.

There can be no doubt of this tree having been formerly in great abundance in several parts of England, since many old buildings are found to be principally of this timber; and there are records which mention several forests of these trees. But how it has happened that a tree once so common, and whose timber is so valuable, should be almost extirpated in England, is not easy to account for.

Peach-trees have recently been much improved by a system which may be easily applied to any species of wall or espalier fruit. No house, fire, or hot-bed is employed, but each tree is planted in its separate frame, which is nothing more than a hot-bed frame, only that, being placed on the common ground, its sides are made proportionably higher, so as to allow the stem of the tree planted

within it, on its south, or lower side, to rise to the height of three feet five inches, from which height the branches are trained almost horizontally under the glass slides, upon a wooden frame, or trellis of laths; so that the tree lies within the glasses on its back, as it were, exposed to the influence of the sun. The trees were planted in November, at four years of age, began to bear at six, and bore very plentifully at seven, eight, and nine.

Another ingenious botanist, in a notice to the Horticultural Society, states his experience of the beneficial effects of watering fruit-trees well, at the time of the setting of the fruit. "Thus," he says, "a tree which in 1814 produced a very few pears, of about half a pound each, in 1815 (by this method) produced a great number nearly double that weight."

In regard to preserving fruit-trees, it is said that tallow, whiting, and linseed-oil, worked well togegether, and of a proper consistence, if applied to fruit and other trees where a limb has been lopped off, will effectually prevent decay; and by occasionally using linseed-oil with a brush, it will prevent all injury from weather for a very long period. This composition will also be found far superior to clay for grafting or budding; as it entirely precludes wet and cold, and is at the same time more yielding and durable, and never cracks.

We have seen an account of an experiment which is said to be infallible in producing a full crop, even in the worst fruit-seasons.

The mode is, to every acre apply a load of muck straw, or orts raked from the grass-fields. Lay it in heaps, five or six to the acre, agreeably to the size of the orchard. To every heap put about three ounces of sulphur; then choose a clear day

with a favourable breeze, and set fire to the heaps, the smoke of which will kill all worms and insects on the trees, even though they should be lodged under the bark. Or place a fire of damp straw in one or more pans adapted to the purpose, into which scatter half a handful of powdered sulphur. Let the pans be moved about, keeping them to windward, and the smoke being blown through the trees, will cause the flies to fall by thousands; this must be repeated as long as any grubs or flies remain.

But if this cannot conveniently be applied to wall-fruit, especially to peach-trees, then sprinkle sulphur, or flower of brimstone, on the leaves and branches with a common dredging-box.

It is also ascertained that rubbing or wiping fruit-trees with the green leaves of elder branches will prevent insects from fixing on them.

To clear moss from all fruit-trees requires only the simple process of sprinkling the dust of common wood ashes on the trunks and branches, particularly in moist or damp foggy weather. It is best done after the leaves are off the trees. The American farmers are said to prevent the blight in apple-trees, and to secure plentiful crops, by the simple process of rubbing tar well into the bark, about four or six inches wide round each tree, and a foot from the ground.

That spontaneous exudation of fruit-trees, called "Gumming," which weakens them excessively, may be prevented by the application to their trunks and branches of a composition consisting of clay, sand, pitch, tar, and the clearings of the stable.

A gardener in Lancashire has found out a cheap and effectual method of preventing hares and rab-

bits from injuring fruit or other trees by eating the bark in winter. It is this:—take hog's-lard, and as much whale-oil as will work it up into a thin paste or paint, with which gently rub the stems of the trees upwards at the fall of the leaf. If this application be repeated once in two years, it will prevent the depredations of those animals, without the slightest injury to the trees.

It is said that the canker in apple-trees may be effectually cured by rubbing the part affected with a brush dipped in train-oil; and Sir G. M'Kenzie has discovered that oil rubbed upon the stems and branches of fruit-trees destroys insects and increases the fruit-buds. Mr. John Linning has added to the discovery, by using it successfully upon the stems of carnations, to guard them against the depredations of the earwig. The coarsest oil will suit; and only a small quantity is required.

An ingenious botanist has recently communicated a method of destroying the aphis on apple-trees, which he has practised for some years with complete success. As soon as the insect makes its appearance, which is in general early in the spring, by exuding a white flocculent cotton-like substance upon such of the rough knotty surfaces of the bark as have afforded it shelter during the winter, he cuts away with a pruning knife all the dead bark from the parts affected, and covers the wounds by means of a brush with a composition of oil of tar, and yellow ochre, of the consistence of cream. Such is the pungency and penetrating property of the oil of tar, that it effectually destroys both insect and ova in the most secret recesses, without injury to the tree, and for some months secures the parts from future attack. The application may be

used at all seasons, and by the addition of lamp-black may be made to correspond in colour with the bark of the tree.

We have also seen a new method of destroying slugs and snails from fruit trees.—Melt the necessary quantity of tar, to which add sufficient pitch to make it dry quickly and give it tenacity; and while melting, stir into, and completely incorporate with it, such a portion of horse-hair, cut very small, as will pervade every part without making it too thick. Apply this with a coarse painter's brush to the walls, a foot from the ground, and in a band of about three inches in width, twice or three times over; the last time it must be daubed on, to render it as rough as possible, and to allow the ends of the hair to project. A circle must also be made with these ingredients round the stem of each tree, so that no communication be left free from it between the ground and the fruit for the slugs to crawl up.

To a person of taste and benevolent disposition, it must be pleasing to see his orchard filled with birds, even though they should destroy as much of the buds and fruits as they are accused of. But the fact is, that instead of destroying the blossom, as supposed, they actually are seeking for the worms that would cause them to perish. The bullfinches are particularly useful in this respect.

It is, however, too much the practice with gardeners to destroy, or frighten away, the feathered race from orchards, whether in blossom or in fruit, a system most injudicious, and in some degree cruel. We shall not moot the point that the birds of the air have a right to share in the fruits of the earth, even when raised by man's industry; but

it is interesting to note that the birds which frequent orchards, especially bullfinches, during the bloom, are not only seeking their own proper food, but benefiting the proprietor by the destruction of numberless insects — "the worms in the bud"— that lie in the yet unfolded blossom, where they had been deposited until the warmth which swells the buds acts upon them also, bringing forward a most numerous race already in the form of caterpillars, and ready to annihilate the early hopes of the year.

Let it also be particularly remembered, that titmice pick off the defective buds of fruit-trees, in search of insects. These little birds are considered by gardeners as peculiarly injurious, by destroying the bloom buds, and, in consequence, are persecuted by them without mercy. But, were they to examine carefully the fragments of the buds which, in this search, the birds scatter about the ground, they would observe that each had been pierced by an insect, which alone had been the object of pursuit.

But these birds do not touch what are called the dead, or sleepy eyes, which may be brought out of that lethargy even after it has continued for several years. It is generally owing to the tendency of the sap to go to the superior buds, and to elongate them into great branches. The lower buds by this means are deprived of the nourishing fluid. It has been the custom to put grafts in the places which the dead eyes occupy, a method both tedious and uncertain. M. Morion de la Martiniere has practised a surer and more certain method. It is to make a small cut above the dead eye in the form of a V reversed, and as deep as the alburnum. By thus stopping the progress of the as-

cending sap it is obliged to develope the bud, or to produce others.

In the early part of the spring, it is common to see small spots of froth in fruit-trees, vulgarly called "cuckoo spittle;" but which, if examined, will be found to contain an insect extremely deleterious to the tree. This should be instantly cut away, together with all the dead bark around the spot, which, with its vicinity, must be painted with a mixture of oil of tar and yellow ochre, with the addition of a little lamp black, if a darker colour is wished for, in unison with that of the tree.

By this means the insects and their eggs will be effectually killed as far as the paint reaches.

It will be found a very efficacious way of destroying caterpillars in their nests, upon trees or bushes, to boil together two pounds of potash, and two pints of water, until reduced to one-half the quantity. Strain the ley through a piece of linen, and let it settle for three or four days. Draw off the clear water, and mix it with six ounces of lamp oil, which will form a whitish liquid, into which dip a linen rag, and wash it round the various nests; when all the insects will instantly die.

To preserve apple-trees and others from the effects of insects, there has recently been practised the simple and efficacious method of forming a thick white-wash of unslaked lime and soft water, which must be applied with a soft painting-brush over the stem and branches of each, just as the sap begins to rise. In the course of the summer the tree will be cleared of all its moss and insects, whilst its bark will acquire and preserve a healthy clear appearance, fresh and green.

A simple, but evidently a philosophical, mode of preserving fruit-trees from the effects of frost, has for some years been practised with great success in the vicinity of Prague, and in other parts of Bohemia. The mode is, to surround the trunk of the tree, when in blossom, with a wisp of straw or hemp; the end of this is sunk, by means of a stone tied to it, in a vessel of spring water, at some distance from the tree. One vessel will conveniently serve two trees, or even several, if the cord be long enough, and made to pass round them before its end is plunged into the water.

The water vessel must be placed in an open situation, and carefully removed from the shade of the surrounding branches.

In all cases of gathering fruit for winter use, observe not to touch them, until ready to drop off spontaneously; then take that which appears ripest in your hand, raise it on a level with the footstick end; if it comes away readily, lay it in your basket carefully. When a sufficient quantity is pulled, lay the fruit, whether apples or pears, in heaps, cover them with clean cloths and mats, and let them sweat, to clear away the superabundant moisture; which operation may require three or four days.

Next, wipe them one by one with clean cloths, and lay them in glazed earthen jars, with layers of sand, an inch thick, which has been well dried in an oven. Close the jar when full, and place it in a cool airy place, but be careful to secure it from frost.

Fruit may thus be kept fresh and good until the next year's growth are ready for use.

Remember the fruit-trees must not be beaten for gathering the fruit; it destroys future fruit-buds.

In preserving apples, pears, &c. through the winter, it is proper to note, that fern is always preferable to straw in forming the bed between the layers of fruit; for it never imparts that musty flavour which is so often produced by the latter.

In America, apples are preserved throughout the winter, merely by laying them on a floor, and covering them with a linen cloth, which secures them from both frost and damp; a woollen cloth will not have the same effect.

There is a very ingenious chemical method of placing fruit in an exhausted receiver, without even the intervention of an air-pump. The process is thus:—In the bottom of a glazed jar, well dried, place some pebbles, just to cover the surface; fill the jar with the apples or pears, rubbed dry; cover the fruit with a piece of wood made to fit exactly, and over that lay some fresh mortar. The *rationale* of this is, that the pebbles attract the moisture of the fruit, whilst the mortar imbibes the air of the jar, and actually draws it off, leaving as perfect a vacuum as could be produced by a machine. The apples are thus preserved, not only from the pressure of the air, but also from its putrescent or fermentative qualities, and will keep good all the ensuing summer.

When apples, or other fruit, are frozen, steep them in cold water until they swell; but the necessity for this may be prevented by covering them with a thin linen cloth before the frost sets in.

To preserve chesnuts, mix them with walnuts, and they will keep sound. This may appear whimsical, but is asserted to be efficacious.

To unite the agreeable with the useful being one of the main objects of this work, we proceed cheerfully to the next head, since there is no part

of domestic management more pleasing than that of the

FLOWER-GARDEN,

whether in the country, or attached to a town residence; and the most economical mode will be always found to consist in uniting simplicity, as much as possible, with ornament. But we write not for those who can throw gardens into parks, and parks into gardens, though even they may here find some useful hints; we offer our economical suggestions to those with whom economy is both a virtue and an act of necessity; and who, having no room for separate summer and winter gardens, must have for their principal object the arrangement of their flowers, and plants, and shrubs, to suit all seasons; and so to blend their colours, as to display their chief beauty when in full bloom, and to provide throughout the greatest part of the year for a succession of enamelled borders, with a sufficiency of evergreens to remain during the winter.

Even if the garden is too small to walk in, it may yet, by a little tasteful management, be made to appear much larger than it really is, when viewed from the house. For this purpose it is always proper that it should have a southern aspect, and that the flower-pots should be mixed with turf, planting the flowers with the darkest leaves and gaudiest petals close to the windows, whilst those of lighter colour and more modest bloom should be placed, in gradation, at the greatest distance. The effect of this will be more striking than may at first sight be imagined.

Should, however, gravel walks be preferred to

turf, they may be managed so as to increase the optical deception, by making those broadest which are nearest to the apartment, narrowing them gradually by a perspective approach of the borders, which will produce all the effects of approaching lines upon paper. These walks, when once formed, and well gravelled, may always be kept in good order by watering them occasionally with a little strong brine from a common watering-pot.

It will be found, however, that the grass-plats are more susceptible of ornament than the gravel walks, especially when diversified by baskets of roses, growing in pots; the baskets to be made either of common rods or of iron, painted of different shades of green, and so varying in size as to admit of gradual diminution in progressive arrangement.

The sun-flower also, if well managed, will be found highly susceptible of this arrangement; besides which, it furnishes a valuable fodder for cattle in the leaves; when in flower, bees flock to it from all quarters to gather honey; the seed is useful in feeding sheep, pigs, and other animals, and produces a striking effect on poultry, occasioning them to lay more eggs; and the stalks, when dried, burn well, the ashes affording a considerable quantity of alkali.

The box may also be transplanted of various sizes; but it ought to be made generally known, that the box-tree is a strong poison. The box-borders of several beds in a garden near Stamford were lately thrown upon some manure in which nine pigs were rooting, four of whom died from eating the noxious leaves, notwithstanding castor oil and other antidotes were administered.

Whilst attentive to preserve neatness, it is pro-

per to observe, that if the decayed leaves of bulbous plants are cut off, the plants are thereby deprived of much nutriment for the ensuing year. The same applies to herbaceous plants; and here we may insert some observations and experiments of Mrs. Agnes Ibbetson, who for the last sixteen years has bestowed indefatigable attention on the examination of the form of plants, and has exposed the absurdity of the practice of burying weeds and vegetable matters in the ground, under the idea of their speedy conversion into manure. A trench, into which she had put a variety of plants, was opened, after an interval of three months: there was no alteration except in the weeds and grasses; the first had thrown out suckers, and the latter a set of roots, which ran among the earth; all the branches of trees were alive; the cabbages, carrots, &c. all in a perfect state of preservation. The next opening was in September: still all was alive and well, but the weeds had again thrown out suckers, though before cut off, and the grasses spread upwards; the branches were in the same state as before; the leaves of the cabbages began to look brown and moist, and a degree of fermentation seemed to have commenced. The third opening was in November: all the leaves had fallen from the branches, but they were still alive; the weeds had not sprung up again, but they were still existing, though, if they had been exposed to the open air, they would not have been so. The cabbages, which were before in a state of fermentation, were now evidently advancing to putridity. The original potatoes were also beginning to decay; but the roots were still alive, with little fibres growing to them; the carrots were likewise still alive and perfect. As to the grasses, and more

especially the everlasting peas, they ran through the earth in every direction. Hence, she observes, that to return weeds and grass to the earth, after digging them up at a great expense of time and money, is but filling the ground with their roots, and that it will never be clean as long as this is done. If, on the contrary, they were brought to a waste place and burned, and their ashes collected, they would not only make excellent manure, but the earth would in a few years become perfectly clean from weeds. The same argument holds good against the ploughing in of green crops. Neither can the decomposition of vegetable matter, buried in the ground with lime, be depended upon.

As some of our fair readers, no doubt, take delight in the laboratory as well as in the flower-garden, we feel happy in giving them a hint as to a useful union of their pursuits both in chemistry and in botany; as it has recently been ascertained that water, impregnated with oxygen gas, and applied to the roots of plants, even in the feeblest state of growth, will rapidly effect a change in their health, and speedily produce a most luxuriant vegetation.

This, however, is only practicable in the summer; but in winter other methods must be pursued, amongst which the following easy remedy, to counteract the effect of frost on tender vegetables, has been communicated by a gentleman who has tried the experiment. The method he takes is, to water the vegetables on a frosty morning, before the sun shines upon them; for it is to be remembered, that it is the sun which completes their destruction, and not the frost itself.

But the greatest enemy of floral beauty is to be found in the snail or the caterpillar, against whose

ravages the utmost precaution is sometimes inefficient. In many cases, where the decay of favourite flowers or tender shrubs is supposed to proceed from blight or mildew, from unseasonable frost, want of watering, &c. it may often be found, on strict examination, that unseen insects are alone the secret cause.

When insects become very troublesome, it would be proper to frighten them away from favourite flower parterres, or vegetable beds, as more consonant to humanity than destroying them *in toto;* but as in particular cases an instant remedy may be required, it will be found beneficial to sprinkle the plants or flowers with the following mixture:—take a pound of American pearl-ashes, or of any other alkali, to which add four pounds of slaked quick-lime, dissolving the whole in five gallons of water.

The application of this will kill earth-worms in the ground, or caterpillars on the leaves, without any injury whatever to the vegetables or flowers themselves. For very tender plants, a very weak solution of aloes in water may be beneficially and safely applied. But where the destruction is not so rapid as to require instantaneous remedy, a simple and certain remedy, or rather preventive, will be found in the process of whipping strongly such plants as can bear it, with the green leaves and branches of the elder-tree; after which, for some months, insects will not attack them. Where the plants are too tender to admit of this rather violent remedy, the fair florist may water her favourite flowers once or twice with a pretty strong infusion of the elder-leaves.

In absolute destruction of life, however, the life which God has given for wise purposes, there is

something unpleasant to a feeling mind, especially when we consider that those humble animals are only seeking that food which God has sent for all. Still we do not deny the right, at least we must acknowledge the power, which man has to destroy such animals as may be either useful or pernicious to him: but yet, when it must be done, it may be more agreeable to employ other agents; for which purpose, and indeed for actual gratification, we would recommend the encouragement of birds, particularly of the sparrow, which is extremely destructive of caterpillars. When caterpillars are particularly troublesome, and require to be destroyed by wholesale, prepare a cone of painted canvass, or of strong paper, extended on hoops, and sufficiently large to cover any bush. Then sprinkle some hot lime on and under the bush; cover it with the cone, having at hand a pair of common fumigating bellows, filled with tobacco and sulphur, in equal quantities, ignited by a piece of charcoal: when the nose of the bellows is to be inserted in a hole fitted for the purpose, and a few blasts will be sufficient to suffocate all the caterpillars, which fall from the leaves, and are killed by the lime.

The dead insects may be allowed to lie on the ground, as their rapid decomposition by the lime renders them an useful manure, if in any quantities. There is certainly humanity in this mode, as the insects are rendered insensible before they are exposed to the corrosive effects of the lime.

The best time of destroying caterpillars, with a reference to a future season, is in autumn; and the best mode is, to sow a bed of mignonette, even for that express purpose; for these insects will

then collect round the mignonette, and may be destroyed *en masse*.

It sometimes happens that minute insects infest whole parterres of rose-bushes; for which there is no remedy so efficacious as to take up the plants carefully, cutting off the most infected branches and suckers, brushing off such insects as may be on the other branches, sweeping the whole into the spot from whence the bush was taken, and pouring boiling water upon it; after which the roses may be planted with safety.

Some of the finest flowers in the garden are sometimes observed to perish just as they emerge from their buds, or from their bulbs. If they are accurately examined, it will be seen that their leaves or petals are completely pierced with small holes, or often with the appearance of having been gnawed by minute insects. The damage, however, is done by the snail; which may thus be known to be in the ground, though it should not yet have been seen.

In such cases it will be proper instantly, early in the morning, or late in the evening, to take up all the sickly flowers, and to pour boiling water into their beds, carefully replanting them, after cleaning their roots from every extraneous substance, especially from the eggs of the snail, which are easily known by their pearl-like appearance.

This is the most certain method of getting rid of those destructive insects; but when the season or other circumstances will not permit the transplanting, and the snails will not make their appearance in open air, it may suffice to invert a large garden-pot over the roots, when the snails will soon come out, and fix themselves to its sides. To succeed better in dry weather, it will be expedient

to water the plant before the pot is inverted; as the shade and moisture together induce the snail to consider the night as having arrived; for the ground snails do not willingly come out in the day, except after warm showers, and then either very early or very late. The slugs are more troublesome to get rid of; but they may be congregated in particular places by distributing pieces of haulm, or cabbage-leaves, at certain distances, where they may at once be destroyed by pouring lime-water over them; a remedy equally efficacious with strewing lime, and that too with a saving of ninety per cent., an object of consequence where the grounds are extensive, independent of its superior neatness and cleanliness.

One final point of economy we shall recommend is, to avoid as much as possible all artificial ornaments in small gardens, unless we wish for a floral toy-shop. These things are always in bad taste, either with regard to selection or size: there is, however, one exception, and that not far from town, which it may be amusing to point out to our curious readers. We allude to a handsome house, with a small garden attached, not very far from Greenwich, on the lower road. In this garden there is a bridge, an alcove, shrubbery, serpentine walks, and some of the gaudiest, yet best arranged parterres and flower-knots, when in full blow, that we recollect to have seen any where round the metropolis. It is close to the road side, and requires no card of admission, as its bosky dells and gay parterres may all be seen from a barouche, or curricle, or from the humbler elevation, as we are now preaching economy, of the outside of a Greenwich stage!

Even in large gardens, ornaments are best

avoided, unless appropriately chosen : for we have seen many structures of high pretension, but ill suited to the genius of the places. It is true that our real ecclesiastical and military ruins are highly beautiful and impressive, but all effect is lost when they are imitated upon a small scale.

In our moist climate too, particularly in the marshy and fenny districts, grottos and hermitages are worse than absurd—they become too often but the vestibule of the grave!

To those, however, who will have ornaments, and those so artificial as to be unlike any thing in the heavens or upon the earth, we shall beg leave to point out some cheap materials, from the use of which little else than time and patience are likely to be lost. These consist of glass-house and foundry cinders; of flints, broken pebbles, rough ores; branches of trees and shrubs, dipped in boiling rosin, coloured with vermilion, or white lead, or lamp black, or yellow ochre.

To fix these in their places requires a strong cement, which may be cheaply formed of a mixture of four pounds of white rosin, double the quantity of bees-wax, a quantity of powdered stone, and a pound of flowers of sulphur. These must be melted over a slow fire, and well kneaded together under warm water. When wanted for use, the cement must be warmed; and, if it can be done conveniently, the substance to be fixed up ought to be warmed also.

Should any of our readers wish for cheapness, taste, and elegance beyond this, we must recommend to them a rural walk from Whitechapel Turnpike towards Mile-end; where, with a little sedulous examination, they may perceive many ingenious specimens of human art, in the variegated

arrangement of broken slates, glass bottles, tobacco pipes, laths, brickbats, &c. in spots of eighteen feet by six; where effects are produced by civic genius in retirement, with the aid of daffodils and periwinkles, which would have been unthought of by a Capability Brown, or a Repton!

Economy, as well as botanical propriety, now leads us to a slight view of the

APIARY.

Bees and flowers seem to form an inseparable association in the mind. The transition, therefore, from the flower-garden to the apiary, is equally natural and agreeable. We do not, however, intend in this place to offer a treatise on the management of bee-hives; writers on that subject are numerous, such as Columella, Warden, Debraw, Thorley, Wildman, White, and others: but to impress on the minds of those who wish to increase their comforts whilst varying their amusements, that the produce of bees is more profitable than the generality of persons may be inclined to imagine. A French bishop being about to make his annual visitation, sent word to a certain curate, whose ecclesiastical benefice was extremely trifling, that he meant to dine with him, at the same time requesting that he would not put himself to any extraordinary expense. The curate promised to attend to the bishop's suggestion, but he did not keep his word, for he provided a most sumptuous entertainment. His lordship was much surprised, but could not help censuring the conduct of the curate, observing, that it was ridiculous in a man whose circumstances were so narrow, to launch into ex-

pense, nay almost to dissipate his entire income in a single day. "Do not be uneasy on that score, my Lord," replied the curate; "for I assure you that what you now see is not the produce of my curacy, which I bestow exclusively on the poor." "Then you have a patrimony, Sir," said the bishop. "No, Sir." "You speak in riddles; how do you then do?" "My Lord, I have a convent of young damsels here, who do not let me want for any thing." "How! you have a convent! I did not know there was one in the neighbourhood. This is all very strange, very unaccountable, Mr. Curate." "You are jocular, my Lord." "But come, Sir, I entreat that you would solve the enigma; I would fain see the convent." "So you shall, my Lord, after dinner; and I promise you that your Lordship will be satisfied with my conduct." Accordingly, when dinner was over, the curate conducted the prelate to a large enclosure, entirely occupied by bee-hives, and pointing to the latter, observed, "This, my Lord, is the convent which gave us our dinner; it brings me in about 1800 livres per annum, upon which I live very comfortably, and with which I contrive to entertain my guests genteely." The surprise and satisfaction of the bishop at this discovery may readily be conceived. The sequel of the story informs us, that afterwards, whenever a curate made application to his lordship for an improved living, he would only reply, "Keep bees."

That this anecdote is not fanciful, may be verified by an experiment of little expense and certain profit; especially if those who keep bee-hives will be careful to let their bees have sufficient room for their industry, in proportion to the fineness of the season.

In favourable years, as for instance in 1809, a single stock of bees has been found, by judicious management in this respect, to produce twelve gallons, or ninety-six pounds of honey, making, at the moderate price of one shilling per pound, nearly a clear profit of five pounds sterling. What a treasure to a poor family would one such stock be, with the profits of it to help them through a dreary winter! When it is considered likewise how cheap and innocent a luxury may thus be extended, absolutely for nothing, to the rosy smiling prattlers that are always found in clustering swarms around the cottage-hearth, and to whom a spoonful of honey on their brown bread would be a delicious treat, surely we need not exhort our female readers, at least, to attend to this beautiful branch of domestic economy; particularly as they cannot contemplate the habits of the little insects under their care, without seeing in them their own most endearing virtues of obedience, industry, regularity, and cheerfulness set forth.

Bees are not only useful, but ornamental: yet it must not be concealed, especially in a work on economy, that they are, in some instances, destructive to flower-gardens: not so much by robbing the flowers of their juices, as by the liberties they take with the favourites of the florist, who will often find the leaves of his rose-tree destroyed by these insects for the purpose of making their cells. This damage is, however, principally done by the wild bees, the common bee being the least destructive, or rather the greatest economist of the tribe; nor do all the species of the wild bee fly to flower-gardens to commit depredations, as the corn-rose is, with them, a great favourite for their domestic uses. Indeed the economist will find advantage in

planting particular species of flowers expressly for his bees. He ought therefore to select those that are shallow, and, generally speaking, of the smaller size. The great favourites of the bee are the lemon thyme, the mignonette, also the rosemary for spring food, and the common thyme and winter savoury for the latter part of the year. In the garden hedges it will be proper to introduce the hawthorn; and the bees must not be driven from the orchard: but they will always leave the garden, if there are bean or turnip fields in its vicinity.

The care attendant upon keeping bees never goes beyond the common amusement proceeding from a garden; and there is the less reason to feel alarm from them, in regard to children, inasmuch as the larger the bee, the more rough, fierce, and useless it is; wherefore the domestic bees are selected, where it can be done, small, oblong in shape, smooth, bright, and shining; and, as an accurate observer may speedily notice, of a gentle, mild disposition.

This appearance seems the most agreeable to the bees themselves; for the queen bee, which is always chosen by the others, may be easily distinguished by her small size and redness of colour, shining brilliantly in the sun s rays, and generally with wings only half the usual length.

Who, that is fond of contemplation, and has indulged it in rural retirement, but must recollect how much his feelings, whether of joy or sorrow, have been enlivened or softened by the hum of the bees, whilst proceeding to their morning labours, or retiring to their evening's rest!

Let your bee-hives, then, be adjuncts to your domestic rural economy, whether your residence may be rural or suburban. Place them in cheerful

situations as early as the beginning of April, if the season is genial, and they will admit of three honey-crops in the course of the summer. The first in May, the second in July, and the third about the commencement of September; but taking care, at this latest period, to leave sufficient food for their winter subsistence. Humanity alone will prompt to preserve them, not only in winter, but also when seeking their honey; for which purpose a mode has been proposed, by having double hives, the one over the other, so that when the lower hive is full of honey, some is to be put into the upper, and a passage opened in the top of the lower hive, through which the insects may pass, when the lower one is to be removed. Midsummer is stated to be the best season for this change.

There is another mode, more rapid, but not quite so humane:—Late in the evening the full hive is removed from its stand, and turned on its top into an earthen crock; a new hive prepared and put over it (bottom to bottom) surrounded closely by a linen cloth, to prevent the escape of any of the bees; then, with long plants of ragweed, the bottom of the full hive is beaten fifteen or twenty minutes as smartly and loudly as possible: after which, almost all the late inhabitants emigrate to the upper hive, which is immediately placed on the same stand from whence the other hive was taken, and these bees carefully fed with brown sugar for some days after; but as some bees unavoidably remain with their stores, who would desperately sting and annoy the plunderers, unless prevented, it therefore becomes expedient to turn the full hive over a hole made for smothering this remnant; but very few, after such a process, will remain. In the operation, however, the brimstone

used discolours the combs, and affects the taste of the honey.

It may, therefore, be more prudent to burn the puff-ball, which acts as a powerful narcotic; but suffers the bees again to recover. In a word, bees are very nimble at their work, and presently recruit their loss.

Full fifteen thousand bees one hive supplies,
That try with novice-wings each year the skies:
And, what I know incredible will seem,
They are all the offspring of one fertile queen.
This truth not ev'n the *Mantuan* poet knew,
Who search'd with piercing eyes all nature through.
Four days inanimate the eggs remain,
And then begin the vital power to gain:
In a worm's shape the bee first strikes the eyes,
And in that form four days successive lies,
While milky juice the embryo's food supplies.
In the ninth day a perfect bee appears,
And nature on it's feet the insect rears,
Two little fluttering wings adorn each side,
And soon it sprightly shines with glossy pride.
These, free from envy, by their labours strive
Who shall enrich the most the common hive.

DIMSDALE.

Passing from the more ornamental, to the humbler domestic precincts, we approach the

POULTRY-YARD,

and to the economical housewife, we here offer a few hints, which, if she pleases, she may add to her family receipt-book.

An experiment has been tried of feeding geese with turnips, cut in small pieces like dice, but less in size, and put into a trough of water. With this food alone, the effect was, that six geese, each

when lean weighing only nine pounds, actually gained twenty pounds each in about three weeks' fattening.

As common food for geese and turkies, malt is most excellent; but economy will point out the grains in preference, unless for immediate, and rapid fattening. It will be proper to boil the grains afresh.

When poultry do not fatten as rapidly as may be wished, without cooping, they have been fed with great success upon steamed potatoes, chopped small and mixed with water: the object of which was to induce them to eat, in order to procure the drink.

Other cheap articles for fattening, are oatmeal and treacle; barley meal and milk; boiled oats, and ground malt.

But to those who wish for excellent food, without regard to economy, we shall hint, that they may fatten their chickens with ground or pounded rice, scalded with milk, and sweetened with sugar, and as thick as paste. Their drink must be beer, and the food given in small quantities during the day.

We are not friendly to the system of *cramming;* but those who choose, may adopt the system of the Sussex higglers, who go to a considerable expense in procuring the materials for the large gobbets forced down the throats of the unhappy animals.

These materials consist of ground oats, mixed up with suet minced small, and treacle: or else of a species of gruel composed of pot liquor, thickened with coarse oatmeal unsifted; to which milk, sugar, and pig's fat are added.

As it is of importance that hens should lay during the winter, an experiment to that effect may not be unworthy of notice. It is said that nettle-tops, gathered when going to seed, then dried and mixed up with a little broken hempseed and pollard in barley meal, and given in the proportion of two or three little pellets or balls daily throughout the autumn, will produce the desired effect. It is known, indeed, that hens, judiciously fed, have laid upwards of two hundred eggs in a season.

It may be observed, as a general rule, that corn before given to the fowls, should always be crushed and soaked in water. The food will thus go further, and it will help digestion. Hens fed thus have been known to lay during the whole of the winter months.

It is the opinion of some, that round and short eggs produce males; but that long and sharp eggs contain the female chickens. This might, however, be very easily ascertained by placing a sufficient quantity of one shape, under a hen, and observing the result.

It is but little known, that tar, rubbed on the necks of young lambs or geese, will prevent the depredations of foxes among them; those wild animals having an unconquerable aversion to the smell of tar.

Though poultry have but two legs, yet rabbits with four are sometimes introduced into the poultry-yard, as well as into the poulterers' shops in the metropolis. This is an economical plan; because they are easily bred and fed. Their best food is the shortest and sweetest hay; and their keep must be economical, when it is ascertained that, with a

little care, one load of hay will serve two hundred couple of rabbits for a year.

Connected usefully with this department, is the

PIGGERY.

This subject is, indeed, an humble one, but not the less deserving of economical notice. We shall not, however, detain our readers long at the sty-door; yet reminding them that pigs, like men, are fond of company at their meals, and will fatten much sooner if kept four or five in each sty, instead of being confined to the eating of their meal in imperial solitude. Let it be observed, too, that a little antimony thrown amongst their food, twice or thrice a week, during the last weeks of their fattening, will promote that operation considerably.

Among many advantages that might result from growing Indian corn in this country, the favourable nature of it with regard to feeding pigs may be mentioned; as a proof of which we can state, that a pig gained, by feeding on Indian corn, in the course of six weeks and three days, the enormous weight of fifteen stone.

We shall conclude with the following economical notice.

Fifty store pigs have been fed per day in the following cheap manner:—One bushel of potatoes, at 1s. 3d., have been boiled in a wash with as much meal of any description as could be bought in a common cheap year for 1s. 4d.; to which were added, 20lbs. of clover hay, at 10d. The coal to boil this wash was estimated at 3d. and attendance at 6d. forming a total of 4s. 2d. or about 1d. per

head, from three months old up to any age. In the article of potatoes alone, this is a saving of 4-5ths in comparison with potatoes given in a raw state. Those who are most skilled in the delicacies of "swine's flesh" will not willingly buy pigs that are fattened upon barley meal; giving the preference to those which have been fed on potatoes and milk, as possessing a much finer flavour, and likewise taking the salt more readily when cured.

There is certainly no economy in fattening pigs to a large size; but we may record that a hog has been recently exhibited in Buckinghamshire, of the extraordinary size of 87 score pounds.

As it is not our wish to leave any part of domestic economy unexplored, to which we can add any useful hints deduced from modern discoveries, we shall proceed to the

FARM-YARD.

We shall, however, avoid any thing like a studied dissertation, contented simply to record a few passing facts, important to the economist, but which have not yet found their way into professed works upon the subject of agriculture—in short, such points as bear more particularly on the peculiar circumstances of the times, rather than the more elaborate investigation of scientific agricultural practice.

The first point then which we would recommend to well-meaning economists, is, to attempt the speedy diminution of the poor's rates in their respective parishes, by finding as much manual occupation as possible for all sexes and ages of the industrious poor who are willing to work; and

those who are not, deserve no further attention, except that which the laws apply to their specific cases of idleness and vagrancy.

If it were, indeed, proposed to bring all the kingdom under the spade husbandry, we should deprecate the plan as injudicious, or laugh at it as impossible; but still, when there is quiescent labour unemployed, it will be found a double saving to employ that labour in the spade husbandry, and in the *et ceteras* of weeding, hoeing, &c. connected with it—nay, a treble saving, since it will save poor's rates, afford a gain by the greater productiveness in proportion to the price paid, and save in the necessary keep of horses.

Several experiments of this kind have already been tried, so as fully to demonstrate its useful practicability; of which one will suffice, the result of the observations of a person who rents a whole parish in the west of England, and is a strictly practical and laborious farmer. Instead of horses, he uses for his arable land the three-tined fork, breast-plough, and hand-hoe; the spade being seldom used, except for old sward. He pronounces spade labour to be not only far better than that of the horse-plough, but even cheaper; and he invites (in the Farmer's Journal) farmers to go and examine his practice. This kind of hand labour has been done lately for a small farm as low as 24s. per acre.

In the manuring of land we may also notice a recent communication to a philosophical work, which mentions, that where lime is laid on the ground in small heaps, at a distance from water, it should be slightly covered with mould, and when rain comes, it will be reduced to as fine a powder as if water were immediately applied:

whereas, when it lies long in the small heaps, exposed to the sun and air, it tumbles down into gross particles, and does not incorporate with the soil, nor have the same effect in the decomposition of decayed vegetables, as when applied in the flour. The expense of covering the small heaps with mould will not be sixpence per acre.

In the formerly very expensive system of drainage, several economical observations have recently been brought before the public attention. We understand there are at this moment many thousands of acres of land in Essex, which are now draining, without straw, by digging the ditches in the usual manner (after ploughing them), and placing at the bottom of the ditch a board, about one inch and a half in thickness on the lower edge, and two inches and a half on the upper edge; in breadth eight or nine inches, and in length about four feet, with two joints; this board fitting the ditch, the earth to be rammed upon it, and the board drawn out by a hook or short chain affixed to it. This method is practised with the utmost success at Old Sampford, and at Thaxted, in Suffolk. But where the soil does not admit of this particular mode being adopted, another may be substituted, by a process by no means expensive; that is, by tiles: first applied in Nottinghamshire, upon land the subsoil of which had a quick or running sand, mixed with clay, which frequently warped, or filled up the drains. The tile is first formed in a mould, and struck in the same manner as a common building-tile: the length of the mould in the inside thirteen inches, the width at the end ten and three quarters, made convex; at the other end six and three quarters concave. The clay being

formed in this mould, was then wrapped on a round mould, the circumference of which was a quarter of an inch more than the width of the first mould, by which means a tile was made in the form of a frustrum of a cone, with a small aperture on the side; the wide end of one tile being sufficient to admit the smaller end of another about one inch, so that when put in the drains, they form a pipe. The aperture is covered with a thin sod of turf, which keeps out the sand, and the water filters through it. In 1809, these tiles cost by contract thirty-eight shillings per thousand, being a moderate load for a waggon and four horses, and will lay about 300 yards.

To save corn, and to save time even, by always having straw ready for use, we must recommend the practice of thrashing out as early as possible, but still keeping the straw in stacks. Where that is not convenient, a very simple mode of preserving corn from vermin, when in the stack, has been practised in Ireland, with considerable success. The mode is to throw some fine sand between every two or three layings of the sheaves in making the stacks or ricks. This sand, if fine and dry, will absorb any little moisture that may be in the corn; and is so offensive to rats and mice, that they will not live in it. The sand produces no inconvenience; always falling out when the corn comes under the flail.

From the corn-stack we may proceed to notice a few recent economical discoveries in saving the grain when sown; an object both of direct saving and of ultimate profit. It has been ascertained in Pennsylvania, that the water in which potatoes are boiled, sprinkled over grain or plants, com-

pletely destroys all insects, in every stage of existence, from the egg to the fly.

For the destruction of the wire-worm, pheasants are particularly beneficial to the farmer. This has been very recently proved in Hertfordshire, where a hen pheasant was shot that excited the notice of the sportsmen from the immense size of its craw, which, on being opened, was found to contain more than half a pint of that destructive insect.

In some parts of France it is the practice to make use of tobacco, either green or in rolls, as a preservative against weevils. These animals, which are apparently lickerish, will come to the tobacco from all parts, and as soon as they have eaten of it, they certainly die.

The mildew in wheat, now known to be produced by extremely minute insects, has been recently counteracted at a very small expense, by a mixture of the following ingredients:—salt, one part — water, eight parts. With this mixture, sprinkle the diseased corn. Where the corn is sown in drills, this may be done with a watering-pot; but the best and most expeditious mode is with a flat brush, such as white-washers use, having a tin collar made water-tight round the bottom, to prevent the mixture dripping down the operator's arm, and running to waste. The operator having a pail of salt and water in the one hand, and dipping the brush into the mixture with the other, makes his regular casts as when sowing corn broadcast. In this way he will readily get over ten acres in the day. About two hogsheads will do one acre: wherever the mixture touches, in three or four days the mildew will disappear;

upon those parts that escape, the sprinkling must be repeated. If judiciously cast, the mixture falls in drops as uniformly as rain.

A weak solution of sulphate of copper has been recommended for the destruction of the smut, and also of the seeds of cockle. It certainly is so far efficacious; but unless very carefully applied, it is apt to injure the wheat itself.

All these plans, however, proceed upon the principle of destruction; but we rather approve of Uncle Toby's conduct to the troublesome fly, and, where we can, think it best "to live and let live," agreeably to the old adage. On this principle, then, we highly approve of a mode recently adopted to guard against the inconvenience produced by the turnip-fly — a mode, too, which, though apparently expensive on one trial, must, in a series of seasons, amount to a real saving, by the certainty which it gives of fair annual crops.

This little insect feeds on the first leaf, which is soft and smooth, and which shows itself in a very few days after sowing; but when the second, or rough leaf appears, the flies either die, or remove in search of other food. A Norfolk farmer, aware of the folly of systematically counteracting nature, sows more than double the quantity of turnip-seed usually sown by others, or which could possibly come forward to a crop. At this extraordinary feast the flies are left undisturbed, and before the superfluous and otherwise useless vegetation can be consumed, the rough leaves appear, when they instantly emigrate to his neighbour's territories, with probably four or five generations of their families; where, if there be only an ordinary sowing for

their support, they eat up the whole in a day, and leave the farmer nothing.

Of *Salt* as a general article for agricultural use, we may state one or two facts. The advantage to sheep was lately strongly exemplified by the killing of Mr. Curwen's shearling South Downs. The livers were perfectly sound, which was rarely the case. For wet situations, salt is most valuable. Mr. Curwen has killed fifty sheep off cole, and not a single bad liver, and scarcely the appearance of a fluke or worm upon them. The sheep on cole and turnips received salt three times a week.

It is stated that, on Aughton-common, near Ormskirk, a field was sown with oats and clover-seed, which field had salt thrown upon it a few months afterwards. Adjoining this field, there was another with wheat, that had not a dressing with salt; during the night, thousands upon thousands of snails left the wheat to feed upon the young clover, but as soon as they got upon the salted land, they immediately died. Its summary advantages have thus been stated by Sir J. Sinclair:—1. It operates as a manure to arable land; 2. It may be of use in promoting the fertility of waste land; 3. It is an effectual remedy against the smut; 4. It preserves the seed, when sown, from vermin; 5. It promotes the vegetation of oily seeds; 6. It increases the produce of pasture land and meadows; 7. It improves the quality of hay; 8. It renders coarse food more nourishing, and moist food less injurious to cattle and horses; 9. It preserves stock from disease, and improves their condition; and, 10. It has a tendency to prevent the rust or blight in wheat.

Much saving and great gain have frequently, of late, been loudly prophesied from the cultivation of various new plants, many of which have failed entirely, whilst others have turned out rather hurtful than otherwise. We shall, therefore, merely select one which has recently succeeded in experiment, and has been already described under the head of *Kitchen-garden*.

This is the Cæsarian Kale, a valuable and most excellent vegetable; for where the ground attached to the residence exceeds not the limits of an orchard, the kale may there be planted amongst the potatoes, which a judicious economist will raise under his fruit-trees, so as to be applicable to the feeding of a cow, from keeping of which useful animal many are deterred, even in the country, through the difficulty of procuring ground enough for summer food and winter fodder.

To enumerate all the useful and profitable seeds that may be raised on an acre or two, belongs properly to a work strictly agricultural; but we select as an illustration of what may be done, from a recent philosophical work, some observations on the subject of harvesting French, Turky, and Scarlet Beans. It has generally been supposed that they should hang on the haum until they get dry, in order to procure good seed; which is a mistaken notion; as, in consequence, very little that has proved good has been saved of late years, the seasons having proved wet and frosty before they were thought sufficiently ripe. This difficulty may be easily obviated, by gathering the beans immediately as they begin to wither, or feel soft near the string, or upper end of the pod, and harvesting them as the weather permits. By this practice much time will be saved, and the seed being then perfect, and

free from the effects of severe weather, will vegetate sooner and stronger than any that may have been saved in the ordinary way.

To the economic experimentalist it will indeed be a source of additional gratification, that his experiments, if they succeed, may be of considerable benefit to society in general, especially the poorer class. One instance in illustration of this will suffice; and we give it from the observations of an intelligent naval officer, retired upon a small farm in the West of England; and who, in order to provide better for the poor in years of scarcity through bad harvests, tried many experiments on the parsnip and carrot root; and finds that they afford as nutritious a beverage as malt, if cultivated and harvested in the following manner: Instead of the common method of sowing the seeds in February and March, he proposes, for this purpose, to sow them from the beginning of June to the middle of August; and early in the following summer to dig them up and harvest them, by first splitting their roots from the crown for about three-fourths of their length, and then hanging them on lines, or laying them on straw, under cover in the shade (in order to retain their volatile salts in as high a state of perfection as possible,) till they are thoroughly dry. One acre of good ground will produce about fifteen tons of either of these roots, which, when divested of their tops and dried, will weigh four tons and a half; these four tons and a half will contain from 2500 to 2700 pounds of fermentative saccharine extract. These roots, thus harvested, are a most excellent and nutritious substitute for hay, in unfavourable seasons. In order to use the dry roots for brewing, they must be ground, and treated in every respect as malt.

To this we will subjoin some remarks of an intelligent Leicestershire agriculturist, who raised Indian corn in this country with considerable success, not only as to its growth, but in regard to its economical qualities as food for cattle. Even in our changeable climate it will grow many feet in length; the stems shooting upwards, from seven to ten feet in height, with many joints, casting off flag leaves at every joint. Under these leaves, and close to the stem, grows the corn, covered over by several coats of sedgy leaves, and so closed in by them to the stem, that it does not shew itself easily, till there burst out at the end of the ear a number of strings, that look like tufts of horse-hair; at first of a beautiful green and afterwards red or yellow. The stem ends in a flower. The corn will ripen in September; but the sun at that season not having strength enough to dry it, it must be laid upon racks, or thin open floors, in dry rooms, and frequently turned, to avoid moulding.

In the Southern States of North America, it ripens readily: but in the more northern ones, it is sometimes found expedient to leave it on the stalks until the frost sets in; which in a few days gives to the ears that dryness and hardness that fit them for harvesting, although not with that complete state of ripeness which warm climates produce.

As it is not a grain of frequent importation, some little description may be necessary. It is sufficient to say that the grains are about as big as peas, and adhere in regular rows round a white pithy substance, which forms the ear. An ear contains from two to four hundred grains, and is from six to ten inches in length. They are of various colours, blue, red, white, and yellow. The manner of gathering them is, by cutting down the stems and

breaking off the ears. The stems are as big as a man's wrist, and look like bamboo cane; and the pith is full of a juice that tastes as sweet as sugar. The joints are about a foot and a half distance. The encrease is upwards of five hundred fold. Upon a large scale, to save the expense of hilling, the seed may be drilled in alleys like peas; and to save digging, the ground may be ploughed and harrowed, which will answer very well. It will grow upon all kinds of land. The ears which grow upon dry sandy land are less, but harder and riper. The grain is taken from the husk by hand, and when ground upon French stones, makes an excellent flour; of which it yields much more, with less bran, than wheat does; and exceeds it for crust, pancakes, puddings, and all other uses except bread; but a sweetness peculiar to it, which in other cases makes it agreeable, is here nauseous. It is excellent for feeding poultry and hogs; and fattens both better and sooner than peas or barley. The stems make better hedges for kitchen gardens than reeds do. It clears the ground from weeds, and makes a good season for any other kind of corn. It was the only bread-corn known in America when first discovered by the Spaniards, and is there called maize.

Even the meanest articles of nature's bounty ought not to be neglected; as with judicious care they may often be rendered both useful and profitable. The thistle, for instance, is here considered as a nuisance; which in truth it is, where land can be turned to any account; yet it is important to know that in Germany they are used as food for horses, first undergoing the process of being beaten in a sack until the prickles are destroyed; horses will then devour them greedily.

In corroboration of this we have seen some observations respecting the good effects of this food on a German cavalry regiment in the British service; the horses of which were brought from a very poor state into good condition in a short space of time.

With respect to the veterinary art in regard to farming, we leave it to the regular practitioners; but it is, nevertheless, of some importance to mention that as drought, by depriving almost all kinds of vegetables of their natural moisture, gives rise to complaints not epidemic, but endemic, which may be simply ranked among inflammatory diseases, &c.; the following treatment, the result of a long series of observation, and of the efficacy of which no doubt can be entertained, may be tried with certain success. To cattle attacked with disease, water, whitened with barley-meal or fine bran, sharpened by a little nitrate of potash, and slightly acidulated, should be administered three or four times every day; and as most of the diseases of ruminating animals have a tendency to putridity, although they live entirely on vegetables, it is proper to put, evening and morning, into their drink, a little vinegar, and one glass of an infusion of aromatic plants, such as wormwood, sage, rue, camomile, rosemary, angelica, juniper-berries, &c. to each animal.

Care should also be taken to rub and exercise them; but those barbarous scarifications which are sometimes employed, should be avoided. A seton may, however, be made in the dew-lap with black hellebore or periwinkle-leaf.

To the experimental farmer, even on the smallest scale, we strongly recommend a perusal of the various works of Mr. Curwen on subjects of agricul-

ture. To extract from these would far exceed our limits on this article, but with one observation we shall close.

In consequence of a great deficiency of straw, a year or two since, Mr. Curwen dried the stalks or *haums* of his extensive crop of potatoes, and they are stated to have made comfortable litter for the cattle:—matter of the utmost importance in the management of the dairy, as the milk of a cow, well lodged, will always be found much superior, both in quantity and in quality, to that of a neglected animal. For this purpose, wherever the poor are allowed plots of ground to raise potatoes, they ought to be encouraged to save the haums, even when other litter is not in scarcity. The habits of economy, which this will encourage, are not to be overlooked as considered with the saving.

As the *ferme ornée* has been long in fashion, we can need no apology for uniting it with the

ORNAMENTAL GROUNDS,

as we cannot omit this department in domestic economy, were it only for the purpose of pointing out to our readers the propriety of rendering that which they adopt as an amusement, also useful to the country, and more particularly so to themselves.

Where quick growth is wanted, where the ground is circumscribed, and perhaps only leasehold, then indeed poplars, or mere shrubs of rapid growth need alone be planted; but on freehold ground the case is far different.

In fact one would suppose that the advantage of extending the plantations, and of bringing into

use a timber possessed of valuable properties, is obvious: it is not only the planter, but the country in general that will thereby be benefitted; as, at the same time that it reduces the extensive importation of foreign timber, which is at present necessary, it can scarcely fail of being the means of promoting industry at home, and by bringing both land and labour into use, which are at present idle, or producing nothing of real value, will contribute materially to the general welfare of the nation.

Such are the sentiments of a very ingenious essayist of the present day; to which we shall add a few, and but a very few, practical hints, merely intending to prompt to further inquiry, on a subject so interesting, and ultimately so profitable.

Birch-trees, we may say without any intention of hurting the feelings of our younger readers, can be applied, at an early age, to various useful purposes.

Beech-trees also form the most delightful clumps and woods for ornamental walks; especially as they do not destroy the plants below them, but actually give shade and support to many species interesting to the botanist. They also form lofty hedges, of a close texture even in winter, from their leaves remaining during great part of that season. The numerous uses of the wood render it valuable even to the branches; and the beech mast is excellent for the piggery. Nay it is said that the leaves collected in Autumn are not only softer, but more wholesome than any other substance, except feathers, wool, or hair, for filling the bed-cases of the poor.

Chesnut wood has recently been successfully applied for the purposes of dyeing and tanning: thus

forming a substitute for logwood and oak bark. Leather, tanned by it, is declared by the gentleman who made the experiments, to be superior to that tanned with oak bark; and in dyeing, its affinity for wool is said, on the same authority, to be greater than that of either galls or sumach, and consequently the colour given is more permanent. It also makes admirable ink.

But the *Larch-tree* is perhaps the most profitable of any, when at the same time it cannot but be esteemed as highly ornamental.

Evelyn, and almost every writer on timber since he published his *Sylva*, has recommended planting larch; and it is truly surprising with what little effect, as it is well known to be a very durable timber, and the most profitable to the planter.

By experiments tried on larch-trees, and reduced to fair calculation, it appears that those trees, on an average, increase nearly two cubic feet and a half, during every year of their growth; which, at the low rate of one shilling per foot, would be about half-a-crown per annum, for trees allowed to stand from thirty to fifty years.

The larch is also one of the quickest growing trees in this climate, whereas the slow growth of the oak is almost proverbial. A larch-tree was lately cut down on his Grace the Duke of Athol's estate at Blair, which contained 252 cubic feet of timber, the age of the tree 79 years: and larch-trees of 60 years growth contain from 60 to 70 cubic feet at a medium. From these facts it would be easy to estimate the value of a plantation of larch at the expiration of 60 years, as there ought to be nearly 300 trees upon an acre at that period: and in making this estimate it must be recollected, that larch does not require a rich soil, as it thrives

best on the sides of hills, and in barren and rugged districts.

The comparative value of larch and Scotch fir, will not bear calculation. In 1800, a larch of fifty years old sold for twelve guineas; while a fir of the same age, and in the same soil, brought fifteen shillings. The larches are never broken by snow, and very seldom torn up by winds, and then only in single trees. Scotch firs are bad and shabby growers, at about 800 feet of altitude. Larch grows luxuriantly some hundred feet higher. Such is the surprising fertilizing quality of the leaves or spines of the larch, that in the course of between twenty and thirty years they convert the most barren and rugged mountains, formerly not worth ninepence per acre, into an herbage worth from ten to fifteen shillings per acre.

Larch-trees may be planted much nearer to one another than oak; and consequently a greater number may be grown upon an acre: the successive thinnings will soon more than repay the expenses attending the planting, inclosing, and repairing the fences.

It is necessary to state, that there are three species of timber-trees called larch; viz. the *pinus larix*, or white larch; the *pinus pendula*, or black larch; and the *pinus microcarpa*, or red larch; but the preceding observations apply to the *pinus larix*, or white larch only, which was originally brought from Italy.

It appears by experiments, carefully tried, that larch is superior to oak in stiffness, strength, and lightness; and also in the power of resisting a body in motion (called resilience,) and it is inferior to Memel or Riga timber in stiffness only.

The wood of the larch is well calculated for ship-timber, and would make excellent masts, as it is peculiarly fitted to withstand the effect of sudden gusts of wind; it is preferable to oak for most of the purposes of architecture and engineering. It makes excellent floors, when properly seasoned; and the best steps for staircases, because it wears well, and is not liable to splinter at the nosings. It has been used by the Duke of Athol for boats and mill-axles, and found to answer better than any other wood.

Among the various species of timber-trees that will thrive well in this country, we may venture to say, that there are not more than two kinds that are generally useful; the others are either of short durability, or are durable under particular circumstances only, and therefore not eligible for extensive plantations, though highly valuable for particular purposes.

Larch bark is coming gradually to be used for the same purposes as oak bark, and considerable purchases of it have recently been made for tanning. In particular it may be mentioned, that the Duke of Athol has sold one hundred tons of larch bark, at ten pounds per ton.

It appears by experiments, instituted on a large scale, for the express purpose of estimating the relative value of the bark of larch (*larix pyramidalis*) to that of oak, that the results were as follow: —1. Of equal weights and quantities of skins, prepared in precisely similar methods, by means of oak and larch bark, the larch-tanned specimens were found to be specifically heavier than those prepared by the oak-bark. 2. The colour of the larch-tanned leather is a light fawn, while that of

the oak-tanned is of a deep brown. In respect of durability, the great test of the utility of leather, specimens of both kinds were submitted to actual experiments in shoe-soles, and found to be equally lasting.

If it were necessary to shew the advantages that may result from a little attention to the care and preparation of ornamental grounds, we could readily do so, by a reference to the exertions of an amiable clergyman, recently deceased, which might serve as an useful example to many of his brethren. This was the late Rev. William Smith, rector of Kingswinford, near Dudley, but in early life, rector of Bideford, where his praiseworthy conduct is still gratefully remembered. At that place, the parsonage is situated on an eminence, at a considerable distance from the church, and commands a most extensive prospect; but it was, till that time, only a mean dwelling, surrounded by stone quarries, and altogether presenting a scene rather repulsive than attractive; and what was worse, from its elevation and proximity to the ocean, it seemed to bid defiance to improvement. Notwithstanding all this, such was the energy of the new possessor, and so correct was his judgment, that he overcame every difficulty; and, in comparatively a short time, converted a bleak and cheerless desert into a little paradise. By introducing a vast number of hardy shrubs, to spots where they were likely to resist the rough blast and the sea air, he contrived to provide an ample shelter for those of a more tender character; and by cutting out walks through the irregular grounds, and skirting them with a variety of the most simple but pleasing plants, common to that neighbourhood, he gave a picturesque beauty to what had been hitherto a wild and disgusting waste.

In all maritime situations, great difficulties operate against the planters, in consequence either of the force or quality of the sea breezes, or perhaps both. The effect of this, upon all forest trees hitherto tried, must be evident to most of our readers; but it is now ascertained that the mulberry-tree is perfectly capable of resisting whatever malign influence may exist in the sea atmosphere. That the winds on the north-eastern coast of the kingdom are as violent as, and much colder than those in the south-western counties, cannot for a moment be doubted: yet it is an important fact, that in the former situation there are some very striking specimens of that beautiful tree, which seems not only to defy the weather, but even to flourish in their exposed situation, throwing out their spreading branches in all directions, both with and against the wind, and covered with a foliage, rich, full, and verdant, even to their very summit.

We shall not dilate here on their advantages as food for the silk-worm; but it is evident, that a belt of them raised round plantations of less hardy forest trees, must be highly conducive to shelter, and might enable us to clothe the wildest hills in Durham or Cornwall with the richest foliage, and the finest timber.

With one or two slight observations we shall now conclude.

It has been said that sheep are the best gardeners; and it is true that sheep-feeding will keep the grass-walks and lawns as smooth and even as the scythe; with the advantage, too, that nothing is allowed to go to waste, as is the case with the short-cut grass. But where the flower-parterres are too beautiful to be exposed to sheep, the scythe must be used, and its produce may be disposed of

to very great advantage; provided care is taken to plant all the produce of the kitchen-garden in regular rows or drills, between which, trenches may be dug from time to time, and filled up with the short grass, over which the earth ought again to be thrown. Thus, in the course of a few weeks, a large garden may be managed so as to contain between its rows a considerable supply of new vegetable manure of the best quality; and which will be in full activity even on the hoeing and earthing up of that season; imparting rapid vegetation, and an improved flavour to the various plants and productions.

The preservation of paling is always an object of economy. One mode of preserving iron is simple and efficacious. Boil eight pounds of hog's fat, cut very small, in a glazed pot or pipkin, with three or four spoonfuls of water; when well melted, strain it through coarse linen or cerecloth, then set it on a slow fire, with four ounces of camphor broken small, allowing it to boil gently. Take it off, and, whilst hot, mix with it as much black-lead as will give it colour and consistence, and lay it on hot. This will not only preserve the iron in the atmosphere, but also whatever portion may be in the ground.

Intimately connected with this department, where fortune favours the practical economist, is the

CONSERVATORY,

which, with a little judgment, may be made useful as well as amusing.

To begin then with Conservatories on the smallest scale, these may be used solely for the temporary protection of spring flowers that naturally blow

from February to May; but are too often exposed to blighting weather, and to harsh winds that nip them in the bud, whilst in the humblest conservatory they will expand with vigour.

This refers to mere shelter; but when a house is warmed by air flues, or where a flue can be conveniently carried from the parlour or kitchen fireplace to the little conservatory, then it may be made conducive to an earlier display of the productions of nature.

Conservatories may be fitted on such a plan as to be merely temporary; but it will certainly be much better, where occupancy is likely to be permanent, to commence on such a scale and on such a plan that future enlargement shall be practicable at the smallest expense. One rule, however, we recommend, whenever practicable, to make the conservatory adjacent to the usual morning sitting-room, with an immediate communication. A slight glazed shed, run up in this manner from a parlour window, will relieve much of the trouble and attention required for the management and preservation of bough-pots; and may be rendered conducive to elegant gratification, even though it should only give shelter to flowers already plucked from the parent stalk. Under the head of *Dressing Room*, this branch of the subject has already been particularly noticed; we shall content ourselves in this place by giving publicity to a simple process, by which the lovers of flowers will be enabled to prolong the enjoyment of their short-lived beauty for a considerable period. For this purpose, it is merely necessary to place the faded flowers in scalding water, deep enough to cover about one-third of the length of the stem; by the time the water has become cool the flowers will be found

erect and fresh; then cut off the shrivelled end of the stems, and put them in cold water.

In some situations, conservatories become a harbour for flies and other troublesome insects. Various recipes have been given by various authors for waging mortal war upon insects of all kinds; but those who prefer serving them with an ejectment, will have recourse to the more lenient method of concentrating tobacco-smoke for a few minutes in their Conservatory, and then opening the sashes to permit them to escape from a vapour always unpleasant to them, and fatal indeed if applied in excess.

A cheap method of forming conservatories will suffice as a conclusion to these short hints; and here we shall recommend a mode for which a patent has recently been obtained, and which deserves adoption.

The patentee's method, which he denominates perforated shield-glazing, consists in uniting panes of crown or common glass, previously cut out in the shape of shields or coats of arms, which he causes to lap over one another, in the manner of fish scales, in frames of metal or wood, Instead of common putty, he unites the panes with a cement, on which the action of air, water, and frost, has but little, if any, effect; leaving an aperture at the base of the shield, so that the condensed steam or water may pass off, which in the common manner of glazing falls upon the plants to their great injury. By this shape and method of shield-glazing, the lap-over of the glass becomes an inclined line; and the cement, being furrowed out on the under side, forms a channel for the condensed water to escape between the laps of the glass, without freezing, as is the case in the common method of

glazing, which is very destructive to the glass, and occasions a very heavy annual expense for repairs.

We have very recently seen an extraordinary fact stated, which deserves peculiar notice here. It is averred that in Russia, particularly in the vicinity of St. Petersburg, it is now common to see green-houses heated on an entirely new plan which promises to become general. It consists simply in substituting the breath of cattle for the old method of heating by fuel or steam; and its superiority was evident from the fact, that in a climate where they have often twenty-four degrees of frost, vegetables were raised far superior to any thing produced in this country. So far as the plan can be described without a plate, the byre, containing the cattle, is built in the form of a double house, with a partition wall, through which are a number of square holes, opposite the different cribs, leading to the green-house, and which open and shut at pleasure. These holes are placed a few inches above the cribs, and when the animals lift their heads for the purpose of breathing, the warm air immediately finds its way under the glass frames on the opposite side. The byre is, of course, kept very close, and for this purpose is provided with double doors, which are also listed. In this way the temperature was raised so high, even with a very limited number of cattle, that the aperture sometimes required to be closed, and the superabundant heat carried off by means of a ventilator. *A priori*, it might be supposed that this closeness of the byres, although beneficial to vegetable, would prove injurious to animal life; but it is asserted, that the cattle actually throve better, and fattened more quickly under this mode of treatment, than when their sheds were kept

more open. Cattle, while they inhale oxygen, respire carbonic acid gas—a species of nourishment which, when not given to the extent of an over-dose, will undoubtedly quicken and promote vegetation. Independently of the saving in fuel and men's time, the breath of the cattle serves for both heat and moisture, and completely supersedes the necessity of watering.

From the conservatory to the

HOT-HOUSE

is but a step, even in general practice. On the new principles of the application of artificial heat, a green-house may be rendered a hot-house at an expense scarcely worth mentioning; and if not upon a very large scale, not only a green-house, but even hot-beds may be kept at a proper degree of warmth, solely by that surplus of culinary heat, which is lost or expended uselessly in old kitchen fire-grates, with the trifling additional expense of keeping a small fire burning through the night.

The plan is to construct steam-pits for the purpose of forcing all hot-bed plants, from the cucumber to the pine-apple. These are to be filled with earth instead of tan, and to be heated by passing a perforated steam-pipe through a reservoir of water, occupying the whole space below the pit. The water, thus heated, communicates its heat to the earth above, through perforated planks, raising it to a high temperature, and actually retaining its own heat for some days without fire.

The application of this practice, to the green-house and hot house, is too simple to require explanation beyond a mere hint.

Where expense is not absolutely an object, it has been recently proposed to make such improvements in hot houses as will meet every idea of beauty, variety, or elegance of form, and satisfy the most sanguine expectations in respect to durability, and the admission of light. The fundamental source of both these improvements is a solid iron sash-bar of great strength and elegance, and which admits of being bent in every direction without diminishing, but rather increasing its strength.

It is contended that the leading advantages which a solid wrought iron sash-bar or astragal possesses not only over wooden ones, but over every other species of bars hitherto used, either for windows, sky-lights, or hot-houses, are manifold.

They admit of being bent in every direction, without diminishing their strength : hence in hot-houses they offer every possible variety and beauty of shape.

They may be made of any required magnitude ; and this without the use of rafters, but merely by the position and curve of the bar, or in some cases by an increase in its dimensions.

They admit of more light. The best constructed wooden hot-house roofs render one-third of the roof opaque ; the best metallic sashes and iron rafters from one-fourth to one-sixth ; but these not more than one-tenth, the panes of glass being supposed of the same size in the three cases.

They are of greater durability, and occasion less breakage of glass. Iron bars composed of two parts, as fillets inserted in a grooved head or astragal, are liable to be corroded by moisture, when they separate, and thus break the glass.

Copper, tin, and iron, and all compound bars in that way, soon have their parts separated by oxydization in the grooves of junction. But these are solid, and therefore not liable to the same process of destruction. They can merely rust on the surface, when the coating of tin or paint decays.

With all these advantages they are less expensive than copper or any other iron or metallic bar whatever; in some cases coming cheaper than wood, and in general cases not exceeding the price of a hot-house roof formed of rafters and bars of that material.

It is urged by the inventor, that we may render glass roofs expressive of ideas of a higher and more appropriate kind than those which are suggested by mere sheds, or a glazed arcade.

It is true, that these ideas apply only to extensive establishments; but, if they are correct, it shews that an increase of elegance is by no means incompatible with increased economy: and on this principle we notice another observation, where it is asked—ought not such scenes as exhibit the various fruits and flowers of the torrid zone, and support the gaiety and beauty of spring and summer amidst the frigid scenes of winter to be appended to the mansion, or at least appropriated to the more elegant parts of a residence? It is true, numerous attempts have been made to do this in those architectural conservatories so frequently joined to mansions; and to render them tolerable for this purpose, the *shed-like* appearance has been disguised by stone piers and parapet walls. But the construction of such buildings is radically bad; for in proportion as they are dignified by architectural forms, in the same ratio will the plants, to be

inclosed, suffer from the want of the light excluded by the masonry. The state of plants which have passed the winter in such conservatories proves this.

To remove spiders and ants, which often find their way to hot-houses, where they are very destructive, it will be expedient to wash the walls and beams with a very weak solution of corrosive sublimate. The proportion must not be more than two ounces to a gallon of water; and the readiest and safest way of applying it is with a whitewash or painting brush.

To render the hot-house even more useful than in its general purposes, the

AVIARY

may easily be connected with it.

For this purpose, whenever pecuniary means and space will admit of it, we recommend that bird-cages shall be superseded by an AVIARY, not only to contain specimens of each kind, but also both the sexes in each class, whether Goldfinches, Linnets, Thrushes, or Canary Birds. Birds, that will not breed in cages, may do so in a less confined state; and even if they do not, yet there is still a charm in society of which we ought not needlessly to deprive them. It is true, indeed, that the sexes of most of the several species of singing-birds do not appear to adopt particular association, except in the genial months of spring and early summer; but as we are certain that in some species of the feathered race, as the Nightingale, the Dove, and the Pigeon, the sexual attachment is constant, so is it possible that in the other species there may be a

more continued attachment than we are aware of. At one season of the year we know there is a personal choice; and that feeling may operate throughout the year, though in a less degree, and unnoticed by ornithologists.

Canary birds, in particular, breed three or four times a-year; and the females of that class, as well as some others, will sometimes commence the formation of a second nest before the first brood are fledged.

An Aviary ought always to be turfed, if possible; and there ought to be a ready access to lime; especially for Canary birds. It ought also to be supplied repeatedly with chick-weed, groundsel, and various other wild herbs, that are green and pleasant, either in leaf, or in flower, or in seed; and the garden must supply lettuces, rape-seed, &c.

To enable them to build their nests, let there always be a supply of hay, or soft dried grass, with cotton, wool, the refuse of silk, hair, &c. Hang these up in little nets in various parts of the Aviary, or immediately outside of the wires, so that the birds may gather them as an employment; and then there will be no waste, whilst the little prisoners will be amused and occupied, in the way most congenial to their natural feelings.

Where the Aviary can be placed in a conservatory or green-house, it will add much to the comfort of the birds, inasmuch as it will take off something of the appearance of confinement, especially if the plants are trained to twine in and about the wires: or it may be fixed so as to contain growing plants and shrubs, on the natural turf, with glass frames, so fitted as to cover the wires, when necessary, and to screen the little captives from the inclemency of the weather.

Those who wish to enjoy the melody of their little prisoners, in the room they are in the habit of occupying, may easily do so by opening a communication through one of the windows into a large cage or compartment, which may occupy a certain space of the interior. In winter, particularly, this will be an improvement, as the birds will then be enabled to partake of the artificial warmth of the apartment, whilst the utmost cleanliness may still be preserved by a little judicious arrangement.

Having thus gone over the general ground of the usual domestic precincts, we may now extend our walk, and take a view of such

IMPROVEMENTS

as are facile for the practical economist.

The exterior and interior of the mansion, the gardens, orchard, &c. being fully noticed in other sections, we come now to the enclosures, beginning with the *Iron railing*, which surrounds or fronts so many rural residences of metropolitan vicinity.

To preserve these in a handsome state, and at a cheap rate, it will be sufficient in spring-time to give them a coating of pitch and tar, in equal quantities, melted and thickened with common soot. This coating suffered to dry, and then well rubbed, will keep them in good order during the year; and, from its not scaling off so readily as paint, will at all times act as a more powerful preservative against the effects of the weather.

In more extensive grounds, the *Paling* becomes an object of some consideration. To preserve

this effectually, and cheaply, take any quantity of air-slaked lime, adding two-thirds wood ashes, and one part of fine sand. Mix them well, and sift them; and add as much linseed oil as will bring them to the consistence of paint. To grind them on a slab like paint will be best; but a common mixing, if carefully done, will suffice. If any specific colour is wished for, some cheap ochre may be added; and two coats, for the first season, will be found sufficient, adding a fresh coat every spring.

When *Hedges* can be well attended to, they always look better, in small grounds, than paling; but they require more time to be efficient. In some instances, indeed, in the vicinity of town, we have seen old hedges grubbed up, and paling substituted; but a little care would have rendered this expense unnecessary. Even in twelve months an old hedge may be made useful, if care is taken to put down stakes at five or six feet distance; encouraging the branches to shoot horizontally, but the heads must not be cut off;—simply cut away the old wood, thereby giving more room, air, and, in general, more vegetable nourishment to the younger branches.

It is sometimes difficult, indeed, to preserve these hedge-stakes from noctural depredators; but a whimsical means, once tried with success, may be used to prevent these petty thefts.

A gentleman, suffering much from this nightly pilfering, took up all his hedge-stakes, and bored holes in them, which he filled up with gunpowder, pegging up the holes firmly, and then replacing the stakes. As the thefts merely took place for culinary purposes, the consequences were found so destructive to the domestic economy of the pilfer-

ers, that, in a short time, the remedy was found completely efficacious.

Even on a small scale of improvement, *Planting*, already noticed at some length, will be found not unprofitable; but where the grounds are so small, that every portion of verdure is valuable, it will be best not to plant too many trees to overshadow the grass, particularly *ashes*, as that species of tree not only impoverishes the ground, by its wide-spreading roots, but also injures both the grass and the hedge, by the droppings of its branches.

Where ground is so very moist as to be comparatively useless without draining, and that, too, at a cost much beyond any possible profit or convenience, a great saving of present and of future expense, together with a considerable future profit, may be derived from planting it at once with willows or oziers; which may be planted very close, and, in a very few years, by their annual cuttings, will be found to pay a very handsome rent.

This may be put in practice in very small portions of land; but on a more extensive scale, *alder* will be found lucrative in planting upon waste grounds; as it is, when full-grown, in great request for various purposes in machinery, and also for water-pipes, though perhaps less so now, since the introduction of those of cast iron. Its bark also will pay well, as it is much used for dyeing cotton black.

In the year 1758, ninety-two fir trees were planted upon a piece of ground, about three-quarters of an acre in extent. The land was waste, and poor; no extra expense was incurred, and no further attention was paid to the young trees. In 1813, they were cut down, and yielded ninety tons of

timber, then worth £4 per ton, giving a round sum of £360, which was equal to a rent of £6 10*s.* during the intervening 55 years.

In Yorkshire, very recently, 5000 oaks were cut down, which yielded the sum of £100,000; and, as recently, in Somersetshire, the timber of an estate of 2000 acres, was refused to an offer of £50,000. Even in Scotland, a piece of ground, not worth 30*s.* per acre for agricultural purposes, was planted with sycamores, and at the end of sixty years the trees fetched such a sum as paid £14 per acre per annum during that long period.

There are ways, however, of making land, apparently fit for nothing else but planting, yield even an immediate profit, by a very simple process; for it has been ascertained, that a pound of turnip-seed sown (after harvest) upon an acre of light, sandy, and even gravelly land, which had been worn out by over-ploughing, and ploughed in after two months' growth, leaves, roots, &c. had as fertilizing an effect as could have been produced by 25 loads of manure upon that quantity of land. The practice, we believe, has not been uncommon in some parts of Surrey.

Many families are deterred from settling in retired parts of the country, from the inconvenient intercourse with the great post roads; and, in general, nothing can be done in the way of improvement, except under the exertions of some spirited individual, who is unhappily often checked in his plans by the difficulty of procuring good and cheap materials for the purpose of making or mending the lines of communication.

Therefore, and speaking in general, as few things contribute more to the pleasure and prosperity of the country than good roads, we shall here make

public the great advantage which may be derived from making the roads with bricks. This is of great consequence to be known, in low tracts of clay and loam, where stones and other materials cannot be obtained; but these can be most strongly recommended from trial on a private road: they never cut through, and they resist every thing. The road was partly made with old broken bricks, and was always firmer in that part, than that which was made of stone. Bricks are allowed to be burned for the use of roads duty-free; only observing to make them of such a shape that they cannot be used for any other purpose. If they were made much thinner than usual, they would be still harder and better. Should fuel also be scarce, as well as stones, even this difficulty may be removed, by planting a few acres, in each parish, with willow, alder, and the Canada poplar: these would yield most abundant crops of faggot-wood every third year, and would answer extremely well to the landlord and the tenant; but ash would be still better to plant for this purpose.

Where roads have already been made, but are become almost impassable in winter, in consequence of there being nothing but a loose friable gravel to repair them with, a very simple mode of repair presents itself. We must take advantage of dry weather in May to rail off one-half of the road, and having carefully scraped off the whole of the dirt down to the hard road, then cover it with stones, broken very small, six or eight inches, thick. Over these let the strongest stone-lime mortar be poured in a fluid state, and the stones covered in every part four inches deep with it, laying the surface properly round, and as even and smooth as possible. The mortar should be made with the coarsest sand, or

rather pulverized stones or bricks. Let nothing pass over the road till it is completely dry throughout, then let the other half of the road be finished in the same way. This once properly done, would be done almost for ever.

It is also worthy of notice, as it has been ascertained by experiment, that three loads of riddled gravel will be more efficacious in repairing roads than six loads of unriddled: and, of consequence, a saving of one-half in cartage must instantly ensue.

SECTION VII.

SERVANTS'-HALL.

Goodness of Servants—Mutual Faults of Master and Servant—English Servants recommended in preference to foreign ones—Good appearance of Servants—Master's Characters, and family Secrets—Mutual Duties of Master and Servants—Giving Characters—Folly of raising Servants above their Stations—The giving of Orders—Bad Effects of favouritism, and of encouraging Spies and Tatlers—Folly of confiding Secrets—Board Wages—Exposure of Servants to vice, whilst waiting at public places—Vails and Card money—Vices of Servants—Injudicious Punishments—Capricious discharge of female Servants and its bad Consequences—Proper Modes of encouragement, &c.

We are aware that the distinct arrangement of a Servants'-hall does not belong to the establishment of many families for whose use this work is design-

ed; but as the few hints which we have already interspersed throughout the work, wherever the subject would allow of it, have met with the expressed approbation of many of our readers, we feel that no apology need follow this explanation of the motives that have produced the few following pages:

It may be stated as a curious fact, as old too as the days of the *Spectator*, that few families are happy in their servants.

For this there must be a cause somewhere: perhaps the fault too often lies both with master and servant; whilst the master, forgetful of how much may depend upon himself, endeavours to remedy the evil by substituting foreign servants in lieu of English ones. But this is, too often, adopting a remedy worse than the disease; for the servile sycophancy of foreign attendants, even if it were a fair set off to the obstinacy of John Bull, must be known to be founded upon any feeling but love for the master, or an honest interest in his concerns. Besides, it is unjust to give that sustenance and employment to foreigners which so many of our countrymen are forced to seek in the work-house; more especially at the present period, when the rage for emigration and foreign residence has deprived so many thousands of the class of servants of their customary means of support. Masters and mistresses ought also to recollect that some change in *themselves* may be necessary before their servants can be good ones. The elegant and judicious Addison complains, in one of his essays on this subject, that in his time there was nothing more common than to hear a fellow, who if he were reduced to servitude would not be hired by any one living, lament that he was troubled with the most worthless dogs in the world. There is another point of se-

rious consideration in the economizing of a good name—that there is more of a master's or mistress's character, in the eyes of the world, depends upon the appearance of their servants than most people are aware of. It ought never to be forgotten, that the obligations and duties of masters and servants are equal, or nearly so. If the servant owes obedience, the master owes a good example. If the servant is expected to give cheerful obedience, his duty must not be soured by the order which he is to obey.

The first precaution respecting a servant is, never to engage one without a good character; and the last precaution is, never to give a character that is not strictly true. Giving honest characters is the best security for making honest servants; and, though a strict adherence to this rule may be harsh, nay, almost oppressive, in some individual cases, yet a due attention to it would soon be followed by the best effects, operating as a check upon all, and forcing the worst to adopt at least the semblance of reformation.

It is too often an error to raise servants too high; but *servants* ought still to be *servants*, not *gentlemen* or *ladies*, as some of them will assume in high establishments. My lord may have what he calls his *gentleman*, if he pleases: but gentlemen will not now serve in the mansions of the great, as in ancient times, therefore substitutes for them must be found from amongst the lower classes—and these are too often spoiled by the absurd appellation.

To secure proper authority, a general, equal, and steady conduct is absolutely necessary. Nothing tends to it more than a clearness and conciseness in the delivery of every order, with a positiveness of determination before orders are given. The order

once given and understood, to hurry the execution is always unwise. There must be a certain time necessary for the execution of every order—let the servants have that due time, for to hurry is always sure to produce delay; and a master will generally find in a short time, that his orders are executed better and quicker than would ever have been produced by a busy interference.

Even where there are but two servants, there ought to be no favoritism—no petty tyranny. Due care and watchfulness of servants are, indeed, at all times necessary; but doubts, and suspicions, and prying, and setting one as a spy upon the others, will always shew themselves, by their effects, to be injudicious.

Another error in the treatment of servants, is the making them confidents upon any occasion. There is scarcely one secret in twenty told to servants, that does not require silence on their part; but that silence must be purchased; and it too often happens that bribes, instead of securing silence, only urge to further rapacity of demand, and of expectation.

Even children should be prevented, as much as possible, from familiar intercourse with any servant, except those immediately in service about them; and even with them it ought to be kept within proper bounds. It is seldom that a child can acquire any real useful knowledge in conversation with a servant; and, even where they may, it is but a pearl in the deep, only to be gained by diving into an ocean of impertinences.

If it is the duty of masters and mistresses to set a good example to their servants, it is equally a duty not to place them in situations that lead to vice, or to a depravation of manners. One of these

great evils is the system of board wages, which, though an apparent convenience in many instances, is yet an absolute evil in all, especially with the males, who are thus sent to a public house, there to acquire bad habits, and to get into bad company, whilst young and inexperienced; and who, if longer habituated to the ways of London, have thus a constant excuse for loitering about a tap-room when they are required for domestic business.

Another, and a most important evil, is that of waiting for hours at the doors of a theatre—an evil which scarcely requires animadversion, and which, though not quite so bad as crowded routs—for reasons obvious to every body, is yet one that ought to be avoided as much as possible, by never ordering a carriage before the time it may be wanted, and departing as soon as it is announced. If it were only on the score of health for servants and horses, this is a regulation which demands some consideration from the humane and benevolent.

Here, too, may be mentioned the complete spoiling of servants, by the system which some ladies have adopted to gratify a set of rapacious foreign fiddlers—by giving up their apartments for public concerts. There is something so peculiarly absurd in the arrangement, as almost to bid defiance to animadversion.

Of the same nature was the custom of *vails*, once so prevalent, but now pretty well exploded; at least in its barefaced state of impudence, so well lashed by more than one of our classical essayists. On this subject a whimsical story is told of a gentleman dining at a great man's house, when one servant took charge of his hat, another of his cane, sword, cloak, and gloves. On retiring, each of these was carefully presented, and to each care-

taker a shilling was given; but the gloves were passed over; when the servant, who had taken charge of them, ran out with them in his hand—"Sir! Sir! you have forgot your gloves!" "No matter, friend," replied the visitor, "you may keep the gloves; they are not worth a shilling!"

Of the same nature is the system of card-money, which many genteel families, in provincial towns in particular, have endeavoured to put down, both by a prescribed rule to their friends, and by previous agreement with their servants: we doubt, however, whether any thing we can say on this head will have any effect, whilst amongst the little-great vulgar the custom is tenaciously adhered to, even where there is only a slatternly girl to attend with the tea-kettle.

Drunkenness, though a fault which cannot or ought not to be submitted to in a well-regulated household, yet, if it is seen and known to be but in an early stage with the unhappy victim, a good master will strive to check it, even with some personal inconvenience to himself, in hopes of a cure, rather than consign a fellow-creature to certain destruction, by turning him off with a blasted character.

Yet still must the fault be marked with reprobation, for the sake of others—to check the influence of example or the hope of impunity.

A good master will never consider his time lost when employed in a general and manly superintendence of the servants'-hall; not prying into petty secrets, but guarding against any failing in one servant that may be hurtful to the others. Amongst these are to be ranked profane language and swearing. These must be firmly checked; but at the same time the master or mistress ought

themselves to avoid another failing, but too common.—*Scolding* is bad in itself; and as it often induces replies to which the master or mistress will often submit, rather than part with a good servant, so will this produce a familiarity, and consequent want of subordination destructive of the economy of the household.

The due command of a family is perhaps more shaken by overlooking faults which have been first produced by injudicious conduct on the part of the master, than by pardoning faults originating solely with the servants themselves; yet we would not recommend extremes in either case, since we are well aware that much of the vice and misery that fill the streets of the metropolis, arises from the very unfeeling, yet too frequent, practice of turning out poor girls at a moment's warning, sometimes late at night, when perhaps the poor creatures are far from any friend, and generally with only a few shillings in their pockets, merely to pay for a temporary shelter.

Upon the whole, the most saving plan, in regard to this branch of domestic economy, is to begin with judicious rules, one of the foremost of which is to give fair encouragement to servants, and to establish a system of rewards rather than of punishments. Mildness of language will generally be met with respectful language on the part of the servant; and, of itself, will always produce a saving of temper, at least, to the master or mistress.

Due praise will also be found a most powerful stimulant to good, and in some measure a preventive to bad conduct on the part of a servant.

To all these must be added as much indulgence in proper things, as domestic affairs will admit of, with all possible facilities of harmless recreation;

to which a judicious selection of books may be added at a small expense—of books that will convey information whilst teaching morality—books equally remote, on the one hand, from the gloom of fanaticism, as, on the other, from the pretended liberality of sentiment of the present times; and which, by thus usefully and agreeably filling up the leisure moments of the servant, will, in many points, be a real saving to the master or mistress.

Amongst the days of recreation, *Sunday*, as at present, must still make one; but it will be found an useful regulation, if each servant's Sunday liberty, in turn, should include time for attendance on public worship as well as for visiting friends or strolling to tea-gardens. With the consciences or religion of servants we have no right to interfere, provided that some place of public worship is really attended; but a variety of religious professions in a large establishment may as well be avoided—a caution which, we trust, will not draw down on us the charge of illiberality, since scarce a day passes without the newspapers presenting instances of that species of family prudence.

We shall only hint at one other head—the servants'-table. Here whatever is ought to be of the best of its kind: for in that will be found a true saving by the less liability of temptation to waste; but, on the other hand, nothing can perhaps be more expensive to the master, and in the end more hurtful to the servants themselves, than the delicacies permitted at what is called the *second* table, in large establishments, but which generally, by the superiority of its supply both in viands and in wine, ought to be called the first. These considerations, however, being above the class of general economists, we proceed no further.

SECTION VIII.

GENREAL OBSERVATIONS.

DOMESTIC ACCIDENTS—*Fires—Foul Air—Wells—Cellars—Drowning—Suffocation—Insects, &c.* TRAVELLING — *Short Hints.* POOR — *Economy — Industry—How to be encouraged—Useful and efficacious Modes of Employment, &c. &c.*

DOMESTIC ACCIDENTS.

THE "Economy of Human Life," as it may literally be called, presses upon our attention some little notice of *Domestic Accidents*, and of the best means to counteract them; rather, however, to collect into one focus some of the most practical and novel floating information upon the subject, and thus bring it usefully before general readers, than to examine elaborately its extensive principles.

If the projectors of non-inflammable houses had succeeded in their plans, these cautions would indeed have formed a work of unnecessary reference; but we fear there is little practicability in the various modes proposed, not of guarding against or checking fires, but of using materials which shall not burn when exposed to accidental ignition.

Still where non-inflammable materials can be used with propriety, a saving will ensue, without reference to absolute destructive accidents. Stone staircases, for instance, might be more generally adopted, even in second and third rate houses; and, though our chamber floors, and perhaps the larger beams, must still be of wood, yet it would not only be practicable but economical to introduce one iron beam into each floor, with several smaller for rafters;—an arrangement which would not only protract the falling in of floors, thus giving more time to the inmates to escape, but would also be a preservative against accidents where the dry rot has destroyed the strength of the timbers.

It may be noticed also that some species of timber are not so susceptible of ignition as others. Poplar, for instance, does not burn readily; and, though it may not grow to a very useful size in this country, might be imported with facility from the northern ports of Italy. Brazil wood also, if put into the fire, merely breaks into pieces, without producing any smoke; and, under water, it is said to be everlasting. Under favourable Transatlantic arrangements it might be imported at a moderate price.

In trying experiments upon a small scale, it has been ascertained that wood, if soaked in a strong solution of alum, will not ignite readily; and, when ignited, it emits no flame. This is an observation of some importance, when we contemplate the quantity of fir timber introduced into modern erections, as if building fire ships instead of habitable dwellings. There is a wide distinction between wood, so saturated with alum as only to acquire a red heat that merely affects objects in immediate contact, and

fir deal, so saturated with turpentine that its blaze will extend across our widest streets.

In the absence, however, of absolute existing preservatives, the best safeguard is caution; next to which are the ready means of arresting a fire in its progress, and finally of escaping when all further exertion becomes useless.

As to the means of arresting fire in its progress, it may be useful to observe that, when it merely breaks out in a chimney, there is no cause for extravagant alarm, especially if there is no wood-work immediately connected with it. In such a case merely stopping up the vent, taking care to do so with substances not easily inflammable; or applying even inflammable substances in such a way that they will answer the purpose intended without catching fire, will generally be found (if conducted with patience) to answer every necessary purpose: or place a bucket of water on a stool near the fire-place, and with the hand keep throwing the water gradually on the fire, but so as not to injure it; the steam produced thereby will in a few minutes completely cool the soot, by passing with the current of air up the chimney: but if doors and windows are thrown open, whilst the inmates run about wringing their hands, or merely calling out for that assistance which they themselves ought coolly to afford, then, indeed, it will be fortunate if the house is insured; and the sooner those who are in, get out of it, the better.

Perhaps one of the best artificial modes of securing presence of mind on these occasions, is to have previously ascertained the safest and readiest means of escape, when escape becomes absolutely necessary; added to which, we may adopt the invariable

practice of having the window-seats of all upper rooms fitted up as boxes, to contain either a rope-ladder, or even a knotted rope. Nay it might be judicious to have a knotted rope, and also a ladder fitted to the same window; by which means, whilst females descend by the ladder, one of their male friends might descend by the rope at the same time, and thereby afford them both courage and assistance.

But where these means are not at hand, and fire-ladders cannot be brought in sufficient time, it has been very judiciously suggested, in order to guard against accidents in jumping from windows, that a large feather-bed or hair-mattress should accompany every fire-engine: or two or more mattresses might be so contrived as to be made into one in the space of a minute by two expert persons. Hair deserves a preference for this purpose to other materials, both on account of its elasticity and durability; for such a mattress, if provided with a stout linen cover and kept dry, would last for fifty years.

Indeed, when a fire happens in a town, if the neighbours should have presence of mind sufficient to supply mattresses or beds for this purpose, or common carpets, much inconvenience and even danger might be avoided.

We may add, that when fires happen in livery stables, or in domestic offices in the country, cattle are too often lost through the silly alarm and hurry of the people concerned. It ought, therefore, always to be remembered, that if a horse does not see the fire, he will not be more unwilling to leave the stable then, than at any other time. In fact, generally speaking, a horse accustomed to be led out for pasture, without saddle, bridle, or harness, will not oppose any difficulty; but if others hesitate, from

the novelty of the thing, throw a saddle or some part of their usual geer on them, and the difficulty ceases.

We have spoken of fires as arising from over-heated chimnies; but they may happen from many other points of carelessness, at first sight apparently unimportant.

Fires will happen from pokers being left in the grate until red-hot, when the burning of the fuel, by a diminution of resistance against their gravity, permits them to fall out; they then too often roll from off the edge of the fender upon the carpet. The poker ought always, when used in this manner, to be laid across the top of the grate, or to be placed sloped in front, so as that it shall not become red-hot while serving as a conductor of radiant heat to the immediately surrounding atmosphere, thereby rendering it lighter and producing a current by the cold air rushing in. But the safest way of all is to have a guard, or shoulder, so fitted to the poker as to catch on the edges of the fender whenever it happens.

It is a well known fact that globular glass water bottles, placed in windows, have acted as burning glasses; and it ought to be known by all workmen, who require strong light, that the flasks they use to concentrate the light of the candle upon their work, are very powerful burning-glasses. One of them will readily set fire to any inflammable substance which is placed so as to receive the sun's rays, after they have passed through it, at the point called the focus, that is, at about the distance of one and a half. or two inches from the surface opposite to that on which the sun shines. It is therefore advisable, to be careful where they are placed in the day-time, as serious consequences might result from one of

them standing in the sun; which a circumstance, that occurred lately, experimentally proves.

The various causes of spontaneous combustion are too numerous to recount here; but we may caution our fair readers against permitting any quantity of inflammable substances to be stored up in their mansions, especially where there is a possibility of oil, or lamp-black, or any carbonaceous matter coming in contact with them.

The danger of sparks upon muslin dresses we have already noticed; but we may add here, that the celebrated French chemist M. Guy Lussac is stated to have made a very valuable discovery of a means to render the most inflammable substances combustible without flame and without fire. These bodies are consumed without properly catching fire, or, in other words, without feeding or propagating the fire. Muslin, prepared after the process of the inventor, has been exposed to the flames, and was consumed without producing even a spark.

Domestic accidents often arise from descending into wells, nay even into cellars, unless some artificial mode of ventilation has been adopted. As prevention in such cases is better than cure, it may be prudent, in every doubtful case, to throw a ball of combustible matter into the well, if dry; or to suspend a blazing ball upon an iron rod, allowing it to descend by means of a longer line: or boiling water may be poured down; which, if in sufficient quantity, will so rarify the foul air at the bottom, as to cause it to ascend and make room for that of the atmosphere. It will be proper, however, for the operator to guard against the rising vapour, otherwise partial suffocation may ensue.

When entering a cellar badly ventilated, it will be proper to advance a candle upon the end of a

long rod previously. If the candle continues to burn brightly, there is no danger; but, if the flame sickens or expires, no person ought to enter until artificial ventilation has taken place; which may readily be done by means of a pair of common bellows fitted with a long tin or leather tube, which will speedily supply atmospherical air; for even when the bad or foul air is the heaviest, yet the action of blowing will give the wholesome fluid a degree of energy that will act as a lever, and force the foul air from its resting-place.

The danger of *Drowning* can scarcely be reckoned amongst domestic accidents; but yet accidents of that kind have so often produced domestic sorrow, that one or two hints deserve notice here, in addition to the means promulgated by the Humane Society. It happens, unfortunately indeed, that persons who cannot swim, falling into water, are too apt to lose their presence of mind; but if they can command their recollection, and have a hat on their head, it may be made to answer all the purposes of a cork jacket, simply by laying it on the water on its crown, or on its brim if more convenient, and holding it in an even position by the two sides; but if the individual thus exposed can keep himself afloat long enough to pass a handkerchief over the hat, thus enabling him to hold it by one hand, he will then find a resistance against sinking fully equal to the pressure of ten or a dozen pounds weight, which is more than the surplus of a man's weight in sea-water, even when his clothes are fully saturated.

When accidents of this kind do happen, we ought not to despair too soon of the possibility of restoring life. We must persevere even after hope is gone; for many most extraordinary instances of

recovery might here be recorded. Even when death appears the result of disease, the practice of stripping off the bed-clothes and laying out, as it is called, ought not to be too speedily adopted; especially with children after convulsions. A recent very ingenious writer, observes, that "the means proper to be pursued in cases where it is doubted if death has taken place, are extremely simple. The body should lie in bed undisturbed, and occasionally, if the lips and mouth appear parched, they should be moistened with wine and water. If the weather be hot or sultry, the curtains of the bed ought to be drawn aside, and the room freely ventilated. In cold weather a pan of coals should be at intervals drawn over the bed, so as to keep up a gentle warmth; by doing this, we aid the powers of nature to restore the patient, if the body be alive; or, if death has taken place, we more speedily bring on putrefaction, relieving the friends from a state of dreadful anxiety. As soon as a livid greenish hue is observed about the face or breast, and the limbs, which were once rigid, become again pliant, we may be certain the fatal catastrophe has taken place."

As nothing ought to be left untried in cases of suffocation, whether from drowning, or foul air, or convulsions, we shall venture to introduce here some observations rather of a more scientific nature than the general purpose of this little work; but we shall carefully avoid all technicality beyond what is absolutely necessary for coming at the usual result. A chemical philosopher of some known eminence, being desirous of witnessing the progressive effects of carbonic oxide when freely respired (with a view to comparative analogy in reference to nitrous oxide,) lately made an experiment, which

had nearly proved fatal to him. Having carefully prepared a considerable quantity of the gas, he first noticed some points of resemblance between it and the nitrous oxide, particularly the remarkable sweetish taste; and having first exhausted his lungs of common air as completely as possible, next made three or four inspirations of the gas, and immediately fell upon the floor senseless, and indeed apparently lifeless, pulsation being nearly extinct. Various means were employed for his recovery, but in vain, by several medical gentlemen who were present; at length the introduction of oxygen gas by compression into the lungs was suggested and tried. A rapid return of animation ensued, accompanied, however, by convulsive agitations, excessive head-ache, and quick irregular pulsation. For some time after mental recovery, total blindness, extreme sickness, and vertigo, with alternations of heat and shivering cold, were painfully experienced, and were succeeded by an unconquerable propensity to sleep, which was broken and feverish. An emetic of tartarised antimony removed these alarming symptoms, and the only unpleasant effects felt the following day were those occasioned by the fall. Though this alarming accident prevented that observation of the phenomena which was the object of the experiment, yet, from its results, we may fairly deduce that oxygen gas would prove highly efficacious in cases of suspended animation produced by carbonic acid, choke-damps, and other suffocating gases; and we trust that no one will now be suffered to go down to the grave, after all other means have failed, without trying the application of oxygen gas, which, in the metropolis particularly, may be prepared by a skilful chemist in sufficient time to give it a fair trial, whenever the accident is

instantly taken in hand. Its effects, even after half an hour's immersion in water, ought not to be despaired of.

As accidents often happen from substances not intentionally swallowed, some notice must here be taken of them. The swallowing of pins by children is often attended with very dangerous consequences, especially when there are no ready means at home of attempting a cure. It is important therefore to mention, that an individual very recently, who was informed of a neighbour having swallowed a pin, administered four grains of tartar emetic, in warm water, and afterwards prevailed upon the patient to drink the white from six eggs, which coagulated upon the stomach before the tartar operated, enveloped the pin, and brought it up. There is also a well-authenticated instance upon record, of a person who swallowed 24 pins, being made to throw up the whole by the above method. The same may be used with success for fish and other sharp bones.

We may also record, that whenever any of the preparations of opium, henbane, nightshade, hemlock, tobacco, fox-glove or stramonium, or any poisonous fungus mistaken for mushrooms, or spirituous liquors in excess, or any other unknown matters, have been swallowed, exciting sickness without pain of the stomach, or producing giddiness, drowsiness, or sleep, it will be proper to give instantly one table-spoonful of flour of mustard in water, and repeat it in copious draughts of warm water, constantly, until vomiting takes place. If the person becomes so insensible as not to be easily roused, give the mustard in vinegar, instead of water, and rub and shake the body actively and incessantly.

Observe, however, that in accidents from mushrooms or from fungi resembling them, vinegar or ether ought never to be given; for they instantly disengage all the poisonous qualities. Even salt and water must be avoided, for the same reason.

Caution, therefore, must be used with regard to the vinegar, as a judicious chemist has laid it down as a system of rules to be observed in these cases, that vegetable acids always hasten death when introduced into the stomach with narcotics; but that acidulated water is very useful in counteracting the effects of narcotics, after they have been rejected by vomiting:—thus animals, which would infallibly have died within an hour, have been saved for 24 or 36 hours by the administration of doses of water acidulated by a little vinegar: that a strong infusion of coffee is an antidote to narcotics, and that the decoction of coffee is much less efficacious than the infusion; that camphor is not a counterpoison to narcotics, though it diminishes their effects when administered in small doses; that water and mucilaginous preparations, instead of being beneficial, accelerate death, because they promote the absorption of the poison; that bleeding is never injurious, but frequently sufficient to restore plethoric animals, which would nevertheless die in two or three days without proper attention, and that it is always best to open the jugular vein; that chlorine acts nearly in the same manner as vegetable acids.

It has been observed, upon good authority, that when mineral poisons, technically called oxide, whether of copper or arsenic, are taken inwardly, one table-spoonful of powdered charcoal is a complete antidote, mixed with either honey, butter or treacle, taken immediately: within two hours ad-

minister either an emetic or a cathartic; in this case the effect of the poison is prevented.

We have seen it stated, that a practitioner in the metropolis has recovered several patients from the effects of arsenic by an incessant administration of magnesia and opium.

Note also, that when oil of vitriol has been swallowed, water alone must by no means be used, on account of the excessive heat produced by the mixture; but it may be taken thickened with chalk, magnesia, or soap; or oil may be freely administered. When it has been spilled on the skin or clothes, tear off the clothes and wipe the skin, to free it as much as possible from the acid, before washing with water.

But when spirits of salt or aquafortis have been swallowed or spilled upon the skin, immediately drink, or wash the part with large quantities of water; and, as soon as they can be procured, add soap or potash, or chalk, to the water.

For aquafortis taken inwardly, an ounce of calcined magnesia in a pint of water; or even chalk and water; or half an ounce of soap in a pint of water, will all be beneficial.

Finally, whenever a preparation of arsenic, mercury, or of any metal, or when any unknown substance or matter, has been swallowed, and there have speedily ensued heat of the mouth and throat, violent pain of the stomach, retching and vomiting, immediately drink plenty of warm water, with common soap scraped or dissolved in it. Two or three quarts of warm water, with from three or four ounces to half a pound of soap, will not be too much.

Among other accidents, that of taking corrosive sublimate, by mistake, has not been unfrequent.

For this, a ready and simple corrective has recently been discovered. An ingenious chemist has proved that many of the metallic salts, amongst others the corrosive sublimate, may be decomposed by the application of a magnet. In one of his experiments, a solution of hypermuriate of mercury was soon reduced into running or metallic mercury; hence he anticipates, that fine steel filings magnetized and administered in syrup, must be an admirable antidote to that very deleterious preparation of mercury.

A wasp or bee, inadvertently swallowed, may be killed before it can do any absolute harm, by instantly taking a tea-spoonful of common salt and suffering it to dissolve. It not only kills the insect, but cures the sting. Indeed salt, at all times, will operate as a cure for external stings; but it is proper that the sting itself, if left in the wound, should first be extracted. Then apply *ad libitum*, sweet oil, or *eau de luce*, or pounded mallows, or onions, which are all equally efficacious, though the salt may be the readiest remedy.

If the pain is great, apply powdered chalk made into a paste with water.

Bees will sometimes swarm upon the human head: in which case it is expedient to remain quiet, and to smoke tobacco whilst an empty hive is held over the head; when the bees will enter it.

Accidents from *lightning* are best guarded against by metallic conductors. It appears, however, that Professor Lapostolle, of Amiens, has discovered that straw possesses the quality of serving as a conductor to lightning and hail. Repeated experiments have convinced him, that straws united together serve equally well as the iron rods now fixed upon buildings for the former purpose: at

the same time that they are not attended with similar inconvenience. In consequence of this discovery, the common buildings may be secured from the effects of lightning in the most economical manner, and even crops on the land may be protected from the ravages which they sometimes suffer from hail.

We shall close this essay on domestic accidents by one hint that may sometimes be worth remembering, provided the domestic economy be not regulated upon the principle of Mr. Shandy's parlour door-hinge!

In retired rural situations, a temporary inconvenience is sometimes experienced from want of repairs that cannot instantly be attended to. Amongst others we may reckon the breaking of window sash-lines, as a minor domestic evil: but a simple and most ingenious contrivance may be adopted in lieu, which will render them at all times unnecessary.

Bore three or four holes into each side of the ascending sash, into which insert common bottle corks, leaving a projection of about one-sixteenth of an inch beyond the surface; when it will be found that the elastic pressure of the cork is always sufficient to keep the window up, without opposing any resistance to its being pulled down.

TRAVELLING.

In this wandering age, when ladies explore pyramids, and gentlemen propose to visit the North Pole upon dandy accelerators, it may not be uninteresting to know how six months' provisions can be packed up in a reticle, or a cream-pot replenished in Spitzbergen.

The first of these objects, it appears, may now be easily accomplished: as an indefatigable experimentalist asserts that, after various attempts, he has succeeded in forming a vegetable compound, by which persons engaged in exploring hot and desart regions, may be saved from perishing by hunger and thirst. The ingredients are few, reducible to a small bulk, and not liable, in a state of composition, to spoil by keeping. With a pint of jelly, made from starch with boiling water, mix two ounces of gum arabic and half a drachm of catechu, both previously reduced to powder; and to the whole then add one drachm of crystallized citric acid, also pulverized. Spread the compound upon a clean board or paper, and gradually dry it in an oven of a gentle heat, till it becomes hard and brittle, when it may be broken into pieces of a proper size for being carried in the pocket. Dr. Pearson calculates that two ounces of this compound will sustain life for 24 hours, but supposes that during the exertion of travelling, four ounces may be required; so that 2lbs. would last a person, totally destitute of every other sort of aliment, eight days, by which time he would probably arrive at some place where other food might be procured.

It is possible, however, after such a feast in duodecimo, that the philosophic tourist may wish for something to drink; and we find that an ingenious French chemist, after an examination of the means which are or may be adopted for the preservation of fresh water at sea, gives the preference to the following: 1½ parts of oxide of manganese in powder are mixed with 250 parts of water, and agitated every fifteen days. In this way water has been preserved unchanged for seven years.

We have not yet, indeed, discovered a mode by which a butt of water can be abridged into the size of a canteen, and therefore adventurous tourists to the banks of the Nile may, in the dry season especially, find nothing but turbid water to wash down their culinary *multum in parvo.* To remedy even that defect, chemistry steps in with its aid, and the bad taste and unpleasant odour of Egyptian springs may now be corrected by mixing a small portion of magnesia, and submitting the water to manual agitation.

Generally speaking, when water begins to grow putrid, it may be sufficiently purged by throwing in a handful of salt, and, if salt is wanting, sea-water. For this reason, therefore, the seamen at Venice, when bound on a long voyage, take their supply of water from St. Nicholas' well; which, by being near the sea, is impregnated with salt, and on that account continues long pure and wholesome, the brackish taste being scarce, after a few days, perceptible. We read of the like in the Scriptures to have been done by the Prophet Elisha; who, in Jericho of Palestine, by throwing salt into a fountain, made the waters potable, which before were brackish and putrid. If the water begins to engender maggots, they are killed by throwing in lime. Any of the ingredients used for the clarifying of wine, may be applicable towards the purifying and preserving of water.

For exploratory breakfasts, whether to Baffin's Bay, or to the source of the Nile, preserve eggs by packing in small casks, or tin cases, and fill up with melted mutton suet.

Preserve cream by adding half its quantity of powdered white sugar, and boiling it.

POOR.

So much has already been said upon this interesting subject, in voluminous tracts, that it may well be supposed there is little of novelty to offer upon it; but, as to curtail the poor's-rates must now be an immense saving in domestic expenses, we shall endeavour to collect every practical hint, and every practicable fact, that has transpired on that head, within the last few years, and which has not yet been embodied into any of the prevailing systems.

In doing this, we trust that we shall be, in some measure, the means of suggesting to various individuals opportunities of doing good, which might otherwise have escaped their observation; in fact, we wish, whilst prompting to active and judicious benevolence, to guard our readers against indiscriminate charity, either individually or in the aggregate, except on particular and pressing occasions. We wish to shew them that real charity consists more in the prevention of distress, than in its relief; inasmuch as every pound expended in the one case, does twice as much good as in the other. For truly has it been said, that the immense sums which have been raised for the relief of the poor, when they are exhausted, leave them in no better situation than that in which they were before; and no traces are left to evince the good that has been done. Had such money been expended in works of utility or embellishment, either for the benefit of the public, or of the persons who raised the money, it would have afforded equal relief to the labourer, and the improvement executed would have transmitted to posterity a memorial

of the public spirit which carried it into effect, and at the same time afforded assistance to the distressed. We mean not, in these observations, to suggest anything against those laudable exertions by which age and infirmity are relieved; but only to offer hints on the improvidence which, we conceive, is evinced in supporting health and vigour in idleness, with so great a hazard of contaminating the morals and debasing the character of our honest peasantry.

In this point of view, and to establish our principle, we shall first select a few important and well-authenticated facts, some at home, and others of foreign experiment.

In the first place, it is worthy of record, that a very few years back the farmers of Dauncey, in Wilts, let to the poor labourers of their parish, who had large families, three acres of land, at two pounds per acre; and soon afterwards the late Lord Peterborough gratuitously built a barn for them, where they could thrash their corn; the consequence was, that those men had their names immediately struck off the parish book, have brought up their families to industry and honesty, and all of them now cheerfully pay to the aged and infirm of the said parish their regular rates. The farmers declare that the parish has saved hundreds by this plan. The gentlemen and farmers of Great Comerford, in the same county, are now pursuing a similar plan, by letting the same number of acres to the poor with large families and paying their taxes. Each farmer allows according to the extent of his farm.

From Warwickshire we can present a proof, that the culture of land by hand labour is a most suitable employment for parochial poor, afforded

by the testimony of an intelligent gentleman at Birmingham. He says—"He was an overseer of the poor in the years 1817 and 1818; that there were 800 adult poor in the workhouse, for whom there was no employment; that about thirty acres of land belonged to the town; that these were let to different tenants; but that four acres were obtained, on which they planted cabbages and potatoes, and obtained a sufficient supply for 600 persons in the house from July to September. In March, 1818, he took seven and a half acres more, and cultivated two acres in flax. The soil was hard and sterile, but being dug by the spade, and the turf buried without manure, it soon had a most promising appearance."

In Leicestershire, also, in the village of Thrussington, enclosed about twenty-four years since, the Earl of Essex is a considerable proprietor. At the time of enclosure the noble earl had four cottages and twenty-six acres of land laid out, which were let to four labouring men at the commissioners' value: these four men have amply compensated the noble earl's liberality, in bringing up thirty-two children, without any assistance from the parish; most of whom are in service, and of excellent character in their situations. If the great landholders would follow this noble earl's example, the poor's-rates throughout the country, it is now felt, would be considerably reduced, and industry and sobriety laudably encouraged.

From Germany we shall present only one instance, but it is a custom worthy of imitation, and the good effects of which are already apparent.

In the Duchy of Gotha there are many villages which obtain a rent of 200 or 300 dollars or more, for their fruit trees planted on the road-side, and on

the commons. Every new-married couple is bound to plant two young fruit trees. The rent is applied to parochial purposes, (at present to payment of the debts incurred during the late wars.) In order to preserve the plantations from injury, the inhabitants of the parish are all made answerable: each of whom is thus on the watch over the other; and if any one is caught in the act of committing any injury, all the damage done in the same year, the authors of which cannot be discovered, is attributed to him, and he is compelled to atone for it, according to its extent, either by fine or by corporal punishment.

In England we are very careless of the comforts of our poorer brethren; for though, with the indolent pride of wealth, we give them our money for their actual support, yet we never take the trouble to consider of how much more service it might be to them, by a more judicious expenditure of the same sums. A gentleman at Colchester makes it a rule, whenever he builds a cottage, to plant a vine against its walls, and two or three apple or pear trees in its garden, and thus he confers a greater benefit on his tenant, by giving him an innocent source of gratification to his children, and an excitement to a little extra industry on his own part, than if he had let him a comfortless, mean-looking hovel, at half the rent.

It too often happens that the most benevolent, in erecting their cottages, consider show more than utility; but the latter will still be found most consonant to economy. Stone cottages are always cold; bricks, well burnt, preserve heat better; but very neat walls may be raised of clay, or any other tenacious earth, mixed with straw, and well beat down in moveable frames. When thoroughly dry they may be coated with any cheap material, or

merely rough cast; and it will be prudent to guard them still more with projecting roofs.

An amiable clergyman, in Buckinghamshire, proposed a scheme, in conjunction with two or three other benevolent persons in his parish, so far on the plan of the savings' banks, to receive the earnings or savings of such persons as were regular in attendance on divine service, and to repay the entire amount at the end of the year, together with a premium of one-third or fourth of the whole, by way of remuneration to them for their industry and frugality. Suppose a poor man lays by sixpence every week, from the 1st of January to the 31st of December, the total amount will be 26*s.*: if to this an addition of one-fourth be made by any benevolent person who undertakes to do so, here is 1*l.* 12*s.* coming to the poor man at a time of the year when he most requires it;—money which he may lay out in the purchase of firing or warm clothing, or articles of provision;—money in part the produce of his own industry, which he has saved in small sums with hardly any inconvenience to himself, and part the donation of his benevolent superior. This plan has since been followed with success in a small parish; where, though many grown persons were not induced to adopt it, the children of the parish-school did so with few exceptions, and thankfully received the amount of their savings, with whatever donation their benefactor was pleased to bestow.

Fourteen Sunday banks of this description have been instituted in different parishes in Hertfordshire, and may be considered as auxiliaries to the county savings' banks, in which the depositors frequently deposit afterwards the principal part of their weekly accumulations.

The beneficial results of savings' banks may be

drawn from the fact that in 1821 the weekly deposits into the hands of the commissioners of the sinking fund amounted to 29,000*l.* per week, or one million and a half per annum. In this how easy is it to trace the first steps to economy, loyalty, and a desire for political tranquillity; even the very lowest thus becoming interested in the general welfare of the community.

Even with the poorest, when there is no surplus for a saving bank, something may be done on a small scale upon the plan of a parish in Surrey, where a *chcap shop* is opened for certain articles of clothing for the women. This is upon a limited scale. Here good flannel petticoats are sold at two shillings, and strong calico shifts at one shilling and sixpence. These sales produce a doubly good effect; for as they are known to be annual, many a shilling and sixpence are hoarded for this excellent purpose, which otherwise would probably have been spent at the alehouse.

Upon the whole it would be well if the poor could be convinced of the truth of the following calculations.

1. That four glasses of gin a-day will cost by the year no less than 9*l.* 2*s.* 6*d.*

2. That two pints of porter a day drunk in the ale-house will cost by the year 7*l.* 12*s.* 1*d.*

3. That borrowing money daily at the pawnbroker's, or even weekly by pawning the tools on Saturday evening to take out the Sunday's clothes, and again the Sunday's clothes to take out the tools on Monday morning, (a practice which too often prevails), is absolute ruin to a labouring man, as the interest paid in such cases will amount in the course of a year to from thrice to sixteen times the

sum borrowed, according to circumstances, and costs many a family by the year above 5*l.*

It is, indeed, a practical truth, that employment and instruction are the only true helps and benefits for the vigorous poor.

If, therefore, upon a general system, tradesmen who cannot afford to purchase materials should be furnished with a small assortment, which the sale of their work may subsequently replace; or if able-bodied mendicants could obtain slips of waste ground to bring into tillage with potatoes, the poor's-rates would diminish by means congenial to the moral sense and honest pride of human nature.

It has, therefore, been suggested, that if overseers of the poor were empowered to take land and let it out to poor families to cultivate, and supply them with seed, potatoes, carrots, and cabbage plants, the produce would be found a most seasonable supply to such families, and would tend very much to ease the poor's-rates of such parishes. As there is much waste land in the kingdom, there can be no doubt but that many lords of manors would sanction such a plan.

That it would answer has been fully proved by the experiment of an intelligent manufacturer in the west of England, who adopted something of this kind with his own workmen in the country some years past, and found it fully answer the desired effect. He let a quarter of an acre to each family, and supplied them with seed to stock it. Each quarter of an acre produced about twenty-five sacks of potatoes yearly, besides other vegetables; each family consumed from ten to twelve sacks of potatoes annually, the remainder was applied to fatten pigs, &c.

It is an important and established fact, as stated by the late worthy Secretary to the Board of Agriculture, that in the counties of Rutland and Lincoln, the practice is, to attach land to cottages, sufficient to support that number of cows which the cottager is able to purchase: they are tenants to the chief landlords, and sub-tenants to farmers, yet these latter are very generally steady friends to the system. Well they may be so, for the poor's-rates are next to nothing, when compared with such as are found in parishes wherein this admirable system is not established. In the late minute enquiries made by the Board of Agriculture into the state of the labouring poor throughout the kingdom, many persons were written to who reside in the districts where this system is common; and it was found by their replies, that the practice stands the test of the present distress, as well as it supported the opposite difficulties of extreme scarcity. It is much to be regretted, that so admirable an example is not copied in every part of the kingdom. In those countries where no such practice is met with, it is very rare indeed to meet with a labourer who has saved any money; their reliance is entirely on the parish, and their present earnings dissipated at the ale-house: not so in Lincolnshire; the man who wishes to marry, saves his money to buy cows; and girls who design to have husbands, take the same measures to secure them. Sobriety, industry, and economy are thus secured; and children are trained from infancy to the culture of a garden, and to attending cattle, instead of starving with unemployed spinning-wheels. No object can better deserve the attention of men of considerable landed property: for, if some change of management, decisive in its nature, does not take place, poor's-rates will con-

tinue to increase, till they will absorb the whole landed revenue of the kingdom.

That indefatigable philanthropist thus now speaks from the grave: we trust that his sentiments will not be lost upon our readers.

The venerable Bishop of Chester also most strongly recommends a mode once adopted by himself, among the married labourers at Wallingham, near Cambridge, at the time he was rector of that parish. His lordship divided a certain quantity of glebe lands into allotments of half and single acres; and each labourer, with a family, was allowed to rent one of these allotments, at the rate of three guineas per acre a-year. Upon this land, with the assistance of a little common grazing, they were, in most instances, soon able to keep a cow and a pig; to raise more than sufficient vegetables for their families; to add materially to their comfort in many minor respects; and they were shortly enabled to contribute to the parish funds, instead of being consumers of them. "At the same time," adds his Lordship, "the men were kept from the ale-house, their leisure time being more happily occupied in cultivating their little spot of ground; the rent was always punctually paid, and the land as well, if not better, cultivated than any in the parish."

We are happy to state that we understand Lord Stanhope is pursuing the cottage-system to a great extent on his estate in Devonshire.—In that county the labourers build cottages of mud walls and thatched, which are done at a very easy expense: his Lordship lets to the labourer as much ground as will suffice for house and garden, on a forty years' lease, on condition that he builds a house in a specified time, of not less than three rooms, and a cow-house,—for 2s. 6d. per annum. He also lets

him as much uncultivated land as he can manage (which is generally about five acres, sometimes more,) on a fifteen years' lease, and for the first five years, as it will be burthensome to him to divide and subdivide the ground and erect fences, at the rent of 2s. 6d. per acre; for the next five years at 5s.; and for the last at 7s. 6d.; making an average of 5s. per acre for the whole period; and this is done with every prospect of complete success.

It is universally allowed, that want of profitable employment is the cause of the present distress of the poor; but the question naturally arises, What are the subordinate courses whence this great cause is produced? To answer this question in part, we cannot be blind to the fact, that the increase of the number of large farms has rendered it possible to cultivate the same quantity of land with a smaller proportion of hands; and the consequent decrease of the number of small farms has made it more difficult for the poor man to subsist his family; for the great farmer will not accommodate him with a small quantity of meat, a little milk, or other trifling necessary, which the small farmer, attentive to the smallest profits, is willing to do.

Some part of the evil might, however, be alleviated, if spade-husbandry were more attempted where practicable. It appears that "the Society for Bettering the Condition of the Poor," have received very conclusive calculations of the advantages to be derived from it. Among others, Mr. Taller, of Gateshead, near Newcastle, (a gentleman to whom they were referred for information by the venerable President of the Board of Agriculture), has communicated a variety of important facts on this head. He gives an instance of lands cultivated by the spade, and the wheat *planted* in dibbles, producing

the enormous return of *seventeen* quarters of wheat to the acre! The average produce, in the ordinary mode of cultivation, is not more than *four* quarters, so that the extra expense is more than repaid fourfold; the expense of *digging* an acre of ordinary land, at nursery price, he states to be *33s.*; and this, he adds, is an operation worth two ploughings; and besides, by planting the wheat, there is a great saving in seed. In the usual mode of broad-cast, it requires two bushels to the acre; but in planting, one peck is sufficient. Mr. T. also states, that by spade-husbandry, he has made an acre of land produce the almost incredible quantity of 800 bushels! and he gives it as his opinion, that the more general use of the spade would have the most beneficial effect, not only upon the agricultural labourers themselves, but on their employers also; for although the farmer might not be able to find labourers to cultivate large quantities of land in this way, he might at least cultivate sufficient to employ his quota of the labourers of his parish, and so at once exonerate the poor's-rates, and be himself amply repaid.

In further corroboration we can add, that in Scotland, in the neighbourhood of Hamilton, an experiment was made to try the difference between the spade and the plough. A field was taken, which was in beans the preceding year, and oats the year before: two ridges were dug and two ploughed alternately, and the whole was sown on the same day; a part both on the ploughed and dug being drilled with the garden hoe. The whole was reaped the same day; and being thrashed out, the result was, that the dug sown broadcast was to the ploughed sown broadcast as 55 to 42. The dug and drilled was as $20\frac{1}{4}$ to $12\frac{1}{4}$, upon the ploughed and drilled.—The additional grain was not the only be-

neficial result gained by digging, as in this instance there was also a great deal more straw. The land was free of weeds, and more easily fallowed the ensuing year.

This seems to establish the utility of the practice beyond all doubt; but where nothing better can be done, we would even recommend almost unproductive labour, rather than encourage absolute idleness; and, upon this head, we cannot but admire the laudable plan not long since adopted at Frome for the relief of the industrious poor. So many as were out of employ, on application to the parish officers, were instantly engaged in quarrying stone by the load, at which they earned eight or ten shillings per week; the stones were then taken to a depôt and disposed of for the purposes of building and repairing the roads.

It must indeed be admitted that where the poor are thrown out of employment from stagnation in any particular branch of business, it can be of only small avail to employ them in manufacturing goods of a species with which the market is already overstocked; but, with a little examination, we might discover modes of manufacturing specific articles for which we are at present indebted to foreign countries —a practice that would be clear of the foregoing objection.

In our maritime districts one simple and easy mode of employment, and of profitable employment also, presents itself.

A patent was granted in 1780 (of which the term is now expired) for a new-invented British barilla, the method of making which is as follows: —To any quantity of wood-ashes, add an equal quantity of the ashes of ferns, whins, thistles, rushes, or bean or pea-straw; sift them through a fine sieve,

and add to them an equal quantity of soapers' waste ashes; all these being thoroughly mixed together, there is to be added one-twelfth of fine quick-lime: these different materials are to be put into an iron pan, and boiled two days and two nights, with a sufficient quantity of sea-water, which is to be renewed from time to time; the mass is then put into a reverberating furnace, and fused for about an hour, which, when cooled, is the British barilla.

Very recently a patent has passed in Denmark for the manufacture of paper from sea-weed; should the plan be practicable, it opens a field of employment for the poor in maritime districts, independent of the reduction which would ensue in the price of a very expensive article.

Of the numerous plans which have been proposed for the alleviation of the distressed state of the poor, those appear to be far preferable in which the pauper is obliged to earn his subsistence in some way or other; by which means his natural habits of industry and economy are kept alive; and he is prevented from associating with persons of an idle and profligate disposition, as he would very probably do for no other purpose than that of killing the time which lay heavy on his hands, in a state of idleness so unnatural to him. In many parishes in the country, the poor who could not be fully employed have been supported altogether from the rates, generally in proportion to the size of their family. Certainly no greater reward could be held out for idleness, than to pay a man for doing nothing, equally with another whose days passed in hard labour.

Let it be remembered, too, that money raised for the relief of the poor has frequently been expended in a profuse manner; thereby encouraging them to

depend on the parish for support, and rendering them thoughtless of providing for themselves.

In contradistinction to this we shall offer some practical hints of what has been done to make the poor support themselves, independently of the poor's-rates. The first we shall select took place very recently in Surrey, where some public-spirited inhabitants of the parish of Dorking, at the head of whom was the late lamented Earl of Rothes, associated for the purpose of trying whether the labouring classes might not be induced to place their future relief on a more independent foundation than parish charity, by saving a portion of the fruits of their industry. The success of this experiment surpassed the most sanguine expectations. The scale of contributions was proportioned to the number of each family dependent on the head of it for support: the lowest, for a single person, 6*s.* a-year; and highest, where there were five or more in family, 24*s.* a-year. There were 263 subscribers in the class that might require relief: representing in the aggregate of the families above 1000 individuals, nearly one-third of the entire population of the parish, and above one-half of the labouring class: not one of these was deficient in the weekly payments, which enabled the committee, aided by the liberal subscriptions of the more opulent classes, to afford relief to the subscribers according to their several necessities during thirteen weeks of a bad winter, by distributing 2982 quartern loaves, 906 pounds of meat, 742 bushels of coals, and 1978 faggots. This kept upwards of 80 families from seeking parish relief, and afforded essential temporary comfort to the whole 1000, without any feeling of degradation or a known murmur or complaint.

The Penny Society, established in Mansfield in 1815, has in one year been enabled to relieve 102 persons; thirty-two poor women having received a bed-gown, flannel-petticoat, shift, and a pair of stockings each; the same number of poor men, a hat, a shirt, and a pair of stockings; and twenty poor persons a blanket each. The clothes were made up by the ladies, and the whole carried on without any expense.

Through the benevolent exertions of some ladies of Winchester, a subscription was set on foot of *one penny weekly;* and from 300 subscribers, and a few donations, 150 persons were relieved with coals, blankets, and warm clothing during the winter months: this donation was received with great gratitude, and many poor people voluntarily offered to subscribe on their own account.

An institution, denominated a *Penny Club*, has been formed at Cheltenham. Each scholar contributes a penny weekly: to this small sum are added the subscriptions and donations of honorary members, in the parish and elsewhere, which are divided once a-year, and expended in such articles of clothing as the children stand most in need of.

There is, at Howden, a working society of young ladies, who meet every Thursday evening during the winter half-year, for the benevolent purpose of making clothing for the children of the poor in Howden, of materials procured by subscription among themselves and others who admire their labours of charity; and during a late season they have furnished to the poor, gratis, nearly 400 articles of clothing.

Young ladies, thus amiably disposed, will considerably add to the benefit of their exertions by kindly devoting a few hours occasionally, not only

to working for the poor, but also to teaching them to work for themselves; as many females who have been brought up in factories, and manufactories of different kinds, from their infancy, are very deficient in the arts of sewing, cutting out, contriving and mending: insomuch that when they marry (which they usually do very young,) they are soon at a loss how to clothe their families, and let their children flaunt it in the cast-off garments which may be bestowed upon them, without any proper alterations; so that they look among their little companions, like the daw in borrowed plumes. A school opened for young women once or twice a week, to teach them their domestic duties, would produce the happiest effects under the superintendence of some benevolent lady, who might add to her instructions a few plain directions as to the making of broth, and preparing their humble fare in the most frugal, and yet the most palatable and nourishing manner. Mrs. Melroe's Economical Cookery will be found a great help to a design of this kind, and a most useful present to the cottager's wife at a very trifling expense, as the work itself consists of merely a few pages, and contains no account of dishes beyond the power of the industrious labouring man to procure.

To these instances of judicious general philanthropy, we shall add but two of individual benevolence, though we have numerous specimens before us.

The Earl of Dartmouth, whose example ought to be held up to the imitation of the opulent, recently spent the winter at his seat, personally visiting and relieving his poor neighbours. His charities during that time were very extensive: his draper's bill for bed-clothes alone amounted to 500l A hundred quarts of soup were also daily distribut-

ed by his cooks; and these favours were heightened by a kindness of manner which rendered them doubly acceptable to the poorest.

Sir John Sebright, not long since, adopted an excellent plan in the village of Flamstead, where he resides. He has apportioned certain plots of waste ground to the poor for gardens, and he gives various premiums to those who cultivate them, so as to secure the best crops.

The poor have in many instances formed associations or benefit clubs among themselves, for the relief of the members when sick; but in no instance, we believe, have they yet made provision for the deserving members who have been long subscribers, when they begin to experience the infirmities of nature: yet how desirable that a virtuous and industrious peasant should in the decline of life experience some of those comforts which he then so much requires, without being obliged to exert himself as he did in the days of his youth! This can be effected only by an active co-operation of the rich with their poorer brethren; and we would suggest, that in order to create a fund for the aged, as well as to supply occasional calls, such as sickness, every poor person who is a member should have some friend who would subscribe a large sum, suppose 5l. or 10l. which should be immediately put out at interest for a period of twenty-years, at the end of which time the accumulated interest thence accruing might afford a supply for the relief of the poorer member when sinking into years and decrepitude.*

* Whilst this sheet of the first edition was in the press, we observed in the daily papers the important announcement, that the parish of Greenwich, by dint of judicious regulations, and by a careful expenditure, had during the year 1820, reduced their poor's rates from 16,000*l.* to 9,250*l.*! This is completely a practical illustration of the plans and hints here recorded.

We shall merely add, that a very original and striking suggestion has lately appeared respecting the formation of *National Circulating Libraries*, for the use of the lower orders. Having given them the capacity for reading, it seems but right that we should now furnish them with the most useful and amusing books which are fitted to their situations. To this end it has been proposed, that in each large and populous town a cheap circulating library should be established entirely for their use and convenience, consisting of short and plain tracts and books on most subjects, especially on those which are connected with the improvement of the labouring orders. Of course, neither controversial divinity, nor political pamphlets, should be admitted. The books being short, and consisting chiefly of tracts, there would be no great expense in the first formation of this library; and it might afterwards be supported by its own subscriptions. This measure would gradually draw the people off from that exclusive attention to politics, which so often engenders party violence; it would carry forward the public mind in the path of useful knowledge, and would be the strongest practicable remedy which could be adopted in a free country to counteract the licentiousness of the press.

Ideas often presented to the understanding will affect the heart, and influence the conduct; and books where morality assumes the gay aspect of amusement may engage young persons at home, when without those pleasing resources they might abuse intervals of leisure in the haunts of vice.

SECTION IX.

HOUSE-KEEPING.

Regularity in Accounts and Expenditure—Value of Independence in Money Matters—Power of Creditors—Private Judgment and Feelings a better guide in Expenditure than public opinion—Error of trusting to uncertain contingencies—Disadvantages of dealing on Credit—Correct Accounts of Expences and Payments to be kept—Consequent advantages—Cautions respecting Servants' payment of Bills, &c.

REGULARITY is the very life and soul of economy, but it is too much in fashion with the gay and the idle to despise both; yet such was not the case in the best days of Rome, though Rome was even then luxurious; since we find Cicero himself, in recommendation of some particular individual, says—"You may trust him, for he is a frugal man."

One great advantage of regularity in accounts

is, that, when properly attended to, it will always operate actively as a caution against excess of expenditure when compared with income. When a man's affairs are not on paper, memory must be trusted to, which is sometimes treacherous. Besides, the very exertion of calling upon memory to produce a clear balance of ways and means, is too often so onerous a task to minds not much in the habit of reflection, that people will sooner rush on destruction with their eyes open, than incur the trouble of disentangling their derangements. Indeed, even the steadiest and most contemplative minds would be conscious of their inadequacy to such a task; and, therefore, we generally find that those who could best dispense with regularity, are always the most regular and careful in their accounts.

The great point is, in all cases, to get over the first difficulty, which is that of making a beginning: that once accomplished, less than half an hour every morning will be fully sufficient to put down the expenditure or credit of the preceding day, including all weekly accounts, &c.; and he who pursues this course steadily for one year, even though at the end of it he should find that his expenses are but sixpence less than his receipts, will stand a fair chance of having a larger balance in the ensuing twelvemonth, and that too without any diminution of necessary comforts or enjoyment. To the thoughtless and the gay this may appear a heavy task; but, if duly persevered in, it soon becomes lighter, nay even a source of pleasure, since it enables a man thus to begin every day with a due sense of independence. For, let it be remembered that he who exceeds his income can never be independent; and let it be doubly remembered, that

he can never have it in his power to do a generous action.

But the loss of independence is, in itself, a most serious one; and doubly grating when brought on, not through the dispensation of Providence, but by a man's own negligence. It is true, indeed, that there are many who think as lightly of being in debt as of being in love or in liquor, nay who think or pretend to think themselves the aggrieved party when assailed by a creditor. It is true also, that there are many creditors who get young men into their debt by sinister means, and who, in fact, have little right to complain of their debtor; but we write to the better principled, though perhaps equally thoughtless, classes of society; and to them it may be useful to hint that the greatest of all artificial distinctions, between man and man, is that of *Debtor* and *Creditor!*

It was justly observed by Addison, that if a man contracts debts, his creditor has, from that moment in which he transgresses payment, so much as that demand comes to in his debtor's honour, liberty, and fortune. But this was before perpetual Insolvent Acts were in fashion, and before the minds of the young were paralyzed in honesty by debt and imprisonment becoming nothing more than a trip *over the water*—paying off with a bill at three months on the Lord Chief Justice for the time being. Had such things existed in Addison's days, he would not then have made the remark that one would think the debtor was not aware, "that his creditor can say the worst thing imaginable of him, that he is unjust, and that without defamation."

One easy, practical rule for the avoidance of these evils, and for real Practical Economy, is that a man should live more for himself than for the world—

that is to say, that his expenditure should be regulated rather by the real extent of his means, than by what the world supposes those means to be. He ought to recollect that independence in all things is the greatest blessing which even an Englishman enjoys; but that if he is to model his conduct and expenditure on what he may suppose the world expects from him, he ceases to be independent, and is in fact the slave of all the gossips of his parish, or place of residence.

Let him then be guided rather by what he ought to do, than by what his neighbours may expect him to do. It is very easy for an indifferent by-stander to exclaim that A.'s and B.'s estates are equal in rental, whilst one lives like a prince and the other like a miser. But a little fortitude would overcome this, and the calumniated person, instead of feeling himself obliged to give up his personal residence, would conquer scandal itself, and would soon be left quietly to economize upon his own principles. Even if equality of estate were to oblige the owners to live up to a certain height on the scale; or rather (as the case too often is) to cope with each other in appearance and expenditure; yet it ought to be remembered by all parties that this equality is too often more apparent than real; since estates nominally of the same annual value, are very different in clear income, when jointures, annuities, mortgages, repairs, and other incumbrances, are accounted for.

But then the temptation to expenditure is too often increased even by the existence of these incumbrances: money in contingency, is too often spent half a dozen times over and over, before it actually comes into the hands of the expectant; and therefore we caution the real economist never to

permit the certain expenditure of to-day, to be influenced by the possible contingency of to-morrow. Jointures and life-annuities do not always fall in as soon as expected: as for legacies, the prospect of which too often leads to present extravagance, their chance ought always to be considered as worse than that of the 30,000l. prize. It is time enough to spend them, when they really come into our possession.

But all these visionary hopes, and their ill-consequences, may be guarded against by due caution in expenditure, by regularity in accounts, and by dealing in all things for ready money. Here, indeed, it may be objected, that every man has not ready money to deal with, though by his regular income he may appear to possess the means of final payment; but in such cases a man ought to reflect that if he begins with debt, especially if he spends to the extent of his means, in debt he must live and in debt he must die; with this certainty to boot, that he who lives on credit and anticipates his income never receives for it half its value. The *caution in expenditure*, then, that we should recommend to such a man (if he has not ready money for current expenses) is, to place his wants and wishes under what may be at first a severe control, but which will cease to be irksome when he finds that six or twelve months perseverance in strict economy will enable him to commence a ready money system with the surplus saved. This surplus he will find to go nearly twice as far in the shape of ready money, as if it had been paid to his tradesmen in discharge of a debt.

But, even in ready money expenditure, little will be gained without *regularity in accounts*; for which purpose an expense-book, whatever the an-

nual sum, is a most useful safeguard against thoughtless extravagance. In this we have the authority of Gisbourne, who says, in his work on the duties of man, that, to preserve the course of family expenses within the bounds which every rational man will or ought to prescribe for himself, it is incumbent to keep regular and exact accounts of receipts and payments. In such a book the smallest sums ought not to be omitted; for negligence is always first admitted in small affairs and strengthened by petty indulgences. But the surest way to guard against this is to make up the columns of the expense book monthly; to add up all receipts of money during the month, subtracting the expenditure, and then comparing the remainder with the cash in hand. In less than three months such a practice will become a pleasure instead of a trouble; and the very love of regularity thus created will always be a check upon extravagance.

If any man will compare three months' living upon credit, with three months of ready money and accurate accounts, he will speedily find that he has expended less and enjoyed more in the latter case than in the former. In fact, buying on credit always leads to greater expenditure; for though a person buys, meaning to pay when money comes, yet it too often happens that when the money does come, even if it should not have been twice anticipated, yet it is often laid out in superfluities that might be avoided, whilst the previous debt remains uncancelled.

But there is even another consideration in favour of *ready money*—which is, that every man, who pays as he expends, not only lives for less himself, but enables others to do so too. Justice, observes an elegant writer on this subject, requires us to be

punctual and expeditious in settling all fair tradesmen's bills, instead of contributing by our dilatoriness to augment the general price of articles, which is now fixed by shopkeepers much higher than would be the case, were it not to make up losses by customers who pay slowly or not at all.

With one caution, respecting servants, we shall close this section: it is, never to allow servants to pay tradesmen's bills. Let tradesmen call, or let the master sometimes call on them: let him enquire into expenditure and prices, which, if bills are paid weekly, will always be a work of facility.

To prevent temptation as far as possible on the part of servants, let their wages be paid regularly; otherwise, in more respects than one, they will become masters, and will thus justify to themselves the receiving *per centage* on the amount of bills, by which, consumption, both in the kitchen and stable, is much and unnecessarily increased, even though the master should not be otherwise cheated.

We trust that a due attention to these hints, by families of all ranks, and of every degree of fortune, where economy is not only prudent but necessary, may go far to remedy many domestic evils of the present day. We have not indeed any extravagant hope of reforming the world, but if we can throw in our mite to the stock of general amelioration, our best hopes will be answered.

PRACTICAL ESTIMATES

OF

HOUSEHOLD EXPENSES,

FOUNDED ON

ECONOMICAL PRINCIPLES,

AND

ADAPTED TO FAMILIES OF EVERY DESCRIPTION:

CALCULATED ACCORDING TO INCOME,

And increasing by regular and systematic gradations, from One Guinea per week to 5,000*l.* per Annum, and upwards.

IN THREE PARTS.

PART I.—Containing a Series of Ten Estimates, gradually increasing from One Guinea per week, or 55*l.* per annum, to 48*s.* per week, or 125*l.* per annum, and shewing the most methodical and economical modes of living for such families as are restricted by their respective incomes to articles of necessity only.

PART II.—Containing Eight Estimates, adapted for families possessing Incomes of from 150*l.* to 750*l.* per annum.

PART III.—Containing Six Estimates, from 1000*l.* to 5000*l.* per annum, and upwards. In this part is given a short and comprehensive Rule, showing the proportions that the several branches of a gentleman's establishment ought to bear to each other, and to the whole Income. To which are added, Extensive Estimates of the expense of Horses, Carriages, &c.

A NEW AND IMPROVED EDITION:

Corrected according to the present prices of Provisions.

ADVERTISEMENT TO THE NEW EDITION.

Our special acknowledgments are due to the numerous friends, who have favoured us with their opinions and communications, for this part of the work ; and we feel highly gratified by the public approbation so unequivocally evinced, not only by the very rapid sale of a large Edition, within the year, but also by numerous particular notices from approving individuals. It will be seen that we have availed ourselves of many useful hints, and we feel happy in conceding some points in which practical knowledge should and must be regarded beyond the precepts of the most rational theory. An opinion seems to prevail that our Estimates in the first Series are too low ; but we have several documents in proof of their practicability and utility. In the country they appear to have given great satisfaction, (See Note to Estimate I.) and even in London such Estimates must, as we conceive, be useful. People who can get but little, must live accordingly ; and thousands of families, in town, *must* and do live at a lesser rate than the lowest of these Estimates go ; to such it may be acceptable to be informed, not indeed, how to live, but how *best* to live. In fine, the early Estimates, and many others, with their accompanying Observations, may be considered as affording hints only, which those who are anxious to economise and to obtain the good opinion of the world, by the regularity of their conduct, will readily vary, improve, and apply, *ad libitum*, and as circumstances may require. It will be recollected also, that Economy is the leading principle we strive to inculcate, particularly into the minds of a certain description of our readers, because we are well aware, that even Industry without Economy can avail only in part, and that Industry and Economy together lead to wealth and happiness.

INTRODUCTION

TO THE FIRST EDITION.

MEN of liberal and well-regulated minds will naturally endeavour to place themselves in independent circumstances, or to maintain themselves in that condition of life, as the surest means of acquiring respectability, and the best preservative of the noblest principles of our nature. Nothing can more contribute to these ends, or to the satisfaction of mind and enjoyment of life, than a methodical and regular management of family affairs, so as to proportion the expences of living to the means by which they are to be supported. Dr. Hawksworth observes that Economy is the parent of Integrity, of Liberty, and of Ease, and the beauteous sister of Temperance, Cheerfulness, and Health.

Hence, we are led to hope that the following Practical Estimates of Domestic Expenses will be found acceptable to the public, as the only systematic attempt ever yet made to point out the means by which the various attainments of honourable industry, and of the gifts of fortune, in their several gradations, may be made to administer, with superior advantage, to the amelioration of the necessities of some, to the augmentation of the comforts of others, and to the more refined and more perfect enjoyment of the pleasures and elegancies of those of superior rank in life.*

* For our more expanded views and sentiments on this important subject, we beg to refer our readers to the Section on Housekeeping, page 389 et seq. in "*The New System of Practical Economy.*"

These Estimates embrace a range of Incomes and Expenditures from One Guinea per week, to 5000*l.* a year and upwards; and, though the first of them are adapted to very low Incomes, yet we trust that no apology will be deemed necessary for their introduction; but, on the contrary, we submit them as peculiarly applicable to the circumstances of the present times, when the depressed state of our commerce and manufactures—the deterioration of our landed and funded property, and the depreciated value of money, are severely felt by many who formerly lived in a comparative state of affluence, and to whom, as well as to others, the deliberative aid of the Economist may be no less serviceable than the benign precepts of the Moral Philosopher, or the salutary efforts of the humane Philanthropist.

Our successful endeavours to collect facts, and to obtain correct information and corroborating proofs from persons of experience in the various walks of domestic life, afford us a well-founded hope that these Estimates will, on trial, be found deserving of confidence; and on account of their general utility, will recommend themselves, not only to our more opulent readers, but to young beginners of every class—to those of limited fortunes—to such as may deem it prudent to retrench, and particularly, to that numerous and valuable class of society who depend on their own industrious and economical efforts alone, for the comfort, advancement, independence, and respectability of themselves and their families.

We have uniformly made all our calculations for a family of five persons; namely, *a man and his wife, and three children.* This we have done, not only because it is an average number for a family, exclusive of servants, but principally, be-

cause we shall give a general rule, founded on that *datum*, for extending these Estimates to any greater or less number of children in a family.

As we presume that every man will think it necessary, nay, will deem it incumbent on him, to make a reserve of some part of his income, however small, as a provision for unforeseen contingencies, or as a means of improving the future prospects of himself and his posterity, we have assumed that out of all incomes less than 100*l.* a year, one-twelfth part may be set apart for that purpose; and one-tenth, one-eighth, and even a greater portion of large fortunes. In stating these reductions, though we presume that a gentleman of 1000*l.* a year may lay aside one-tenth, and expend 900*l.* only, yet prudential motives may induce him to abridge his expenditure to 800*l.* or even to a less sum; and so of the rest.

Even with respect to the twelfth-part proposed to be reserved out of the lesser Incomes, the sum, being so small, may, in some instances, be increased, which we would recommend, in all cases, when convenient; but this alone will do much, and, in particular, it will induce a habit of Economy, which may lead to beneficial results.* We remember it was a saying of a late magistrate for the county of Surrey, who rose from an inferior station and died immensely rich, that if every man would, as he had done, make an invariable rule to save but a half-penny out of every shilling that he got, he would infallibly become an opulent man. At any rate, we are desirous of impressing on the minds of our readers, that it would be imprudent to spend more than the reduced or *net sum* of

* See our remarks on this head, p. 366, in "*The New System of Practical Economy.*"

eleven-twelfths, of their respective incomes; and that, in all cases, that sum *only*, should be depended on as being the utmost that prudence and economy will allow.

On extraordinary occasions the portion reserved may be brought in aid, and on such an emergency the necessity of the case, and the judgment of the prudent economist will best direct the extent of its application.

When the sums reserved are too small to be otherwise appropriated to advantage—the Savings' Banks, now established in every district, will afford eligible and secure places of deposit, for their improvement, till they become sufficiently large for other purposes.

PRELIMINARY OBSERVATIONS.

As an Introduction to this first Series of Estimates, it will be necessary to state the principles on which they are founded, and the *one* simple and perspicuous *general rule* by which the several branches of Expenditure in each Estimate are apportioned to each other, and to the respective Incomes to which they belong.

The Principle we have assumed is, that the amount of each Income increases in succession, by a small and regular gradation of three shillings per week; and that the Estimate of Expenses, appertaining to each, increases regularly two shillings and ninepence per week. Hence the following RULE—

Divide the whole Income, whatever it may be, into twelve equal parts;—and of the Expenditure per week, in every Estimate, that of the adults, or parents, will be 4-12ths for each, or 8-12ths for both; and for each child 1-12th, or 3-12ths for the three children: the remaining twelfth will be the reserve, or saving.

In a less scientific, but more familiar language, it is to be understood, that whatever is the amount of Income, for any given time, *in shillings*,—*so many groats* will be the expense of each parent,—and *so many pence* will be the expense of each child, for that time; and that the saving will be *one penny* in the shilling. From these premises is deduced the following TABLE, viz.:—

A TABLE, exhibiting the Proportions which the several Branches of Expenditure, in every Estimate, ought to bear to each other, and to the respective Incomes on which they are founded.

The Income per week.	Est. I 21s.	II. 24s.	III. 27s.	IV. 30s.	V. 33s.	VI. 36s.	VII. 39s.	VIII. 42s.	IX. 45s	X. 48s.
Expenses per week.										
The 2 Parents 4-12ths each 8-12	14 0	16 0	18 0	20 0	22 0	24 0	26 0	28 0	30 0	32 0
The 3 Children 1-12th each 3-12	5 3	6 0	6 9	7 6	8 3	9 0	9 9	10 6	11 3	12 0
Total Expense 11-12	19 3	22 0	24 9	27 6	30 3	33 0	35 9	38 6	41 3	44 0
Reserve, or Saving, 1-12	1 9	2 0	2 3	2 6	2 9	3 0	3 3	3 6	3 9	4 0
Amount of Income	21 0	24 0	27 0	30 0	33 0	36 0	39 0	42 0	45 0	48 0

EXPLANATION.—As we shall have frequent occasion to refer to the foregoing Table, in order to render it and the subsequent Estimates perfectly clear, and to save repetition, it may be proper to say that the quota of 8-12ths or 2-3rds assigned to the two Parents, includes not only all the articles of Provision for themselves, but every other description of Household Expense, together with their Clothes, Rent, and all extras; whilst the 1-12th for each Child consists chiefly of Provisions of the following kinds:—namely, Bread, Flour, Rice, Oatmeal, Sugar, Treacle, Milk, Butter, Potatoes, and some other vegetables, and a participation with their Parents in a small portion of Meat, in the shape of Stews, Broth or Soup, &c. with the addition of Clothes, Washing, and Schooling.

At the foot of each Estimate we have now first given a brief comparative View of the different Incomes that will be required *according to the respective modes of living*, and in case of more or less than the given number of Children; and this Statement will also point out the degree of additional exertion necessary when there is an increasing family.

If to this be added the method given in p. 25 for *varying* the mode of living *according to the Number of Children*, we presume that these Estimates will be found applicable to almost every possible variation of Income and Expenditure.

Our principal object in this First Series of Estimates is, to establish such a systematic mode of management for families, as will enable them to live comfortably, and be respected, however comparatively low their Income; in the well-founded hope, that the habits of regularity and economy thus acquired, will lead to the future improvement of their condition in life.

June 10th, 1824.

PRACTICAL ESTIMATES

OF

HOUSEHOLD EXPENSES.

PART I.

CONTAINING

TEN ESTIMATES

Gradually increasing, according to Income, from One Guinea per week, or about *55l.* per annum, to *48s.* per week, or *125l.* per annum, and shewing the most methodical and economical modes of living for such families as are restricted by their respective incomes to articles of *necessity* only.

ESTIMATE I.

Income 3s. 6d. per day—21s. per week—£55. per ann.
Family,—a Man and his Wife, and three Children.

Provisions, weekly, with their Quantities and Prices.

	£.	s.	d.
Bread and Flour, for five persons,—24lbs. at 1¾d	0	3	6
Butter, Cheese, and Milk	0	1	9
Sugar and Treacle	0	0	9
Rice, Oatmeal, Salt, &c	0	0	6
Butcher's-Meat, or Fish, —say Meat, 6lb. at 4½d.....	0	2	3
Vegetables,—(including a ¼ cwt. of Potatoes, or 4lbs. a day, at 3s. 6d. per cwt.),—2d. a day.....	0	1	2
Table beer,—1 quart a day, at 2d.	0	1	2
Coals,—1¼ bushel per week, on an average all the year round, at 1s. 4d.,—1s. 8d., and Wood, 1d. :— 3d. per day	0	1	9
Candles,—on an average all the year round,—½lb. per week, at 7d.....	0	0	3½
Soap, Starch, Blue, &c.—for washing	0	0	3½
Sundries,—for cleaning, scowering, &c.....	0	0	1
Total for Household Expenses	0	13	6
Clothes, Haberdashery, &c.	0	3	6
Rent	0	2	3
Total Expense	0	19	3
Saving, 1-12th	0	1	9
Amount of Income	£1	1	0

According to this mode of living, as each Child will cost 1-12*th of the Income, or* 1*s.* 9*d. a-week, and each Parent* 4-12*ths, or* 7*s. respectively, (see pp.* 7 *and* 8,*) this Estimate may be adapted to various Incomes and Descriptions of Families, thus :—*

	s.	d.	
For the Man and Wife, only	14	0	per week.
1 Child	15	9	
2 Children ..	17	6	
3 Children ..	19	3	(as per this Estimate.)
4 Children ..	21	0	
5 Children ..	22	9	
6 Children ..	24	6	
7 Children ..	26	3	and so on.

Reserving 1-12th or 1s. 9d. for Contingencies.

OBSERVATIONS.

We give this and other low Estimates, because we are aware that there are many families in the country, and in retired situations, whose incomes are even less than is here premised, to whose circumstances these statements may be applied. They may also serve for a numerous class of industrious mechanics and others, in manufacturing towns and districts, to whom it may be as advantageous to know how to *save*, as how to *get* money; which knowledge, when habitually practised, must infallibly tend to the improvement of their morals, as well as to their future advancement in life.

We understand that *this* Estimate is considered as too low, and it may appear to be so, to the majority of that class of the community into whose hands this work is most likely to come; but we are anxious to be of use to all, particularly to those whose means are small, and who wish to live honestly independent, and *must live within bounds.*

We are now, however, in possession of several documents which prove the practicability of this Estimate, of these we shall mention two;—one of them is from a mechanic in Bristol, who follows our plan literally, but as coals are cheap there, they use them unsparingly, it affords the family some little extra aids, and "now and then a Dobbin of Ale for himself;"—the other is from a servant in a brewhouse at Norwich who has a wife and three young children, whose account corresponds almost *verbatim*, with our own items, and out of twenty shillings, he contrives to save something, because, as he says, he is determined to save.

Respecting *Bread*, which is the principal article of consumption in families of the middle classes, we have founded our calculation on the present price of sound household bread in *London*—namely, from seven farthings to two pence halfpenny per pound, which is a trifle higher than the price given in our last edition; but this is more than the average price in the country: there, too, barley, rye, or oaten bread, is generally eaten in such families, many of whom, also, bake their own bread, which

is a considerable saving; so that our Estimates may be too high for the country, which, however, is an error on the right side. But respecting this and other articles of food, we have made it a point to be as correct, and as generally applicable, as it is possible to be.

As to the *quantity* of bread stated, we consider it as correct. The two adults will eat six pounds each, per week, and we consider the three children as consuming as much as their two parents—that is, twelve pounds more; but this, we are told, is too much for the children: yet, as bread and flour for puddings, &c., constitute the chief part of children's food, and present appearances indicate no immediate reduction in the price, we conceive that we cannot, with propriety, reduce the quantity. Should not this in any case be enough—as the income will not afford more—recourse must be had to potatoes, rice, oatmeal, and other wholesome and nutritive articles of food for the children, which will save bread, and should be constantly given to them, as proper and economical substitutes for this and other expensive articles of diet.

It is better to buy large loaves than small ones; and bread should not be eaten till it is one day old.

The quantity of butcher's-meat given here is very low, and it is necessarily so; but at all places on or near the sea-coast, fish may be bought at a cheap rate, to supply its place; even in London, very frequently, mackarel, herrings, cod, flounders, and other kinds of fish, may be had cheaper than butcher's-meat. The price of good beef and mutton is now from five-pence to seven-pence per pound;—for common joints, the average is about six-pence. But much may be saved by the mode of cooking: meat roasted, baked, or broiled loses fully one-third of its nutritive qualities; if boiled *fast*, it loses nearly as much, but *stewed gently*, it loses least, and what it does lose the liquor acquires, and this thickened with a little meal, ground rice, Scotch barley or pease, and vegetables, affords a most wholesome food, and the family gets the nourishment of the whole meat at the least possible expence.

The prices of coals vary much, according to local situation, and other circumstances. Generally, where coals are dear, coke, wood, turf, or peat, is reasonable; and for six months in the year, but little will be required for either coals or candles. To save expense, oil is frequently used instead of candles in families of this description. For more ample remarks respecting these, we refer to subsequent Estimates.

Nothing is given in this Estimate for tea and sugar; and if these must be had, when the income is so small, the amount must be saved out of the more necessary articles.

We have, in this Estimate, taken the expence of each child at one shilling and nine-pence per week; and though a child in arms will not cost so much, yet the expence of lying-in will be fully equivalent. After the third child, the wife will naturally cause the oldest to attend to the youngest, and by that means gain time for other purposes; and the mind that is bent on frugality and economy, will learn to surmount little difficulties. Besides, in manufacturing neighbourhoods, children are taught at an early age to earn something towards their own support. These, and similar circumstances, will tend to counterbalance such dilemmas as may arise, that would otherwise be disheartening.

ESTIMATE II.

Income, 4s. per day—24s. per week—62l. per annum.
Family, a Man and his Wife and three Children.

Provisions, weekly, with their Quantities and Prices.

	£	s.	d.
Bread and Flour for five persons—24 lbs. at 1¾d.	0	3	6
Butter—2 lbs. at 7½d.	0	1	3
Cheese—½lb. at 7d.	0	0	3½
Milk	0	0	7
Tea—(once a-day only) 2 oz. at 5s. per lb.	0	0	7½
Sugar—2 lb. at 6d.	0	1	0
Grocery—chiefly rice, oatmeal, and condiments	0	0	7
Meat, fish, &c.—say meat, 6 lbs. at 5d.	0	2	6
Vegetables—including 5 lb. of potatoes per day, = 35 lb. at 3s. 6d. per cwt.	0	1	2
Table-beer	0	1	6
Coals—1¼ bushel, on an average, at 1s. 4d.=1s. 8d. and wood, 2d.	0	1	10
Candles—average, ½lb. at 7d.	0	0	3½
Soap, starch, blue, &c. for washing	0	0	3½
Sundries—for cleaning, scowering, &c.	0	0	1
Total for household expences	0	15	6
Clothes, haberdashery, &c.	0	4	0
Rent	0	2	6
Total expence	1	2	0
Saving, 1-12th	0	2	0
Amount of income	£1	4	0

By this mode of living, as each child costs 1-12*th of the income, or* 2*s. a-week, and each parent* 4-12*ths, or* 8*s.* (*See p.* 7 *and* 8.) *this estimate may be adapted to various incomes, and different descriptions of families, thus* :—

For the man and wife only, 16s. per week.
——————— with 1 child, 18s.
——————— 2 children, 20s.
——————— 3 children, 22s. (as per this estimate.)
——————— 4 children, 24s.
——————— 5 children, 26s.
——————— 6 children, 28s.
With a reserve of 1-12th, or 2s. for contingencies.

OBSERVATIONS.

Economy must be the principal object continually kept in view, particularly in this and all the low estimates, in order to render them fully and properly effective. The prudent housewife will readily learn to substitute articles of comparatively less prices for those of greater expense, which, notwithstanding, will be no less wholesome and nourishing, especially for children. Thus, potatoes, rice, &c. as already observed, will save bread. Treacle is a good substitute for butter or sugar, for children, and milk and water instead of tea or beer. Oatmeal gruel, or the different kinds of porridge, make a good breakfast for them; and Scotch barley, stewed in the liquor of boiled meat, will occasionally make them an excellent meal. Fish may sometimes advantageously supply the place of butcher's meat. Potatoes are the cheapest and best of all vegetables that can be eaten in a numerous family. Peat, turf, coke, or wood, in local situations, will save coals. Oil saves candles; and so of many other articles, that will readily be suggested to the mind of an economical manager.

The books of cookery supply many useful receipts for cheap living.

ESTIMATE III.

Income, 4s. 6d. per day—27s. per week—70l. per ann.
Family—a Man and his Wife and three Children.

Provisions, weekly, with their Quantities and Prices.

	£	s.	d.
Bread and flour for five persons—24 lbs. at 1¾d.	0	3	6
Butter—2 lbs. at 8d.	0	1	4
Cheese—½lb. at 8d.	0	0	4
Milk—1d. a-day	0	0	7
Tea—¼lb. at 5s.	0	1	3
Sugar—2¼lbs. at 6d.	0	1	1½
Grocery—including rice, &c. and table condiments	0	0	7
Meat, fish, &c.—say meat, 6lbs. at 5½d.	0	2	9
Vegetables—including 5lb. of potatoes a-day, 35lbs. at 3s. 6d. per cwt.	0	1	2
Table beer, 3d. a-day	0	1	9
Coals—1¼ bushel per week, on an average, all the year round, at 1s. 4d.—1s. 8d. and wood. 3d.	0	1	11
Candles—½lb. at 7d.	0	0	3½
Soap, starch, blue, &c.—for washing	0	0	3½
Sundries—for cleaning, scowering, &c.	0	0	1½
Total for household expenses	0	17	0
Clothes and haberdashery, &c.	0	4	6
Rent	0	2	9
Extras and contingencies	0	0	6
Total expense	1	4	9
Saving, 1-12th	0	2	3
Amount of income	£1	7	0

According to this mode of living, as each child will cost 1-12*th of the income, or* 2*s.* 3*d. a-week, and each parent,* 4-12*ths, or* 9*s.* (*See p.* 7 *and* 8,) *this estimate will be applicable to various incomes, according to the number of children :—viz.*

For the man and wife only, 18s. per week.
——————— with 1 child, 20s. 3d.
——————— —— 2 children, 22s. 6d.
——————— ——— 3 children, 24s. 9d. as per this estimate
——————— ——— 4 children, 27s.
——————— ——— 5 children, 29s. 3d.
——————— —— 6 children, 31s. 6d.

Reserving 1-12th, or 2s. 3d. for contingencies.

OBSERVATIONS.

It is obvious that the scales of living given in this and the two preceding Estimates are more immediately applicable to persons residing in the country, than to those in the metropolis. We beg leave, however, to impress strongly on the minds of all, and particularly of those who live in London, (to whom many eligible opportunities are presented for living within bounds) that frugality and a steady adherence to the rule of government laid down in this and the foregoing Estimates are necessary; and it is a maxim universally admitted, that "he who does not early learn to manage a little, will never be able to do with a great deal."

In proportion as the income increases, some trivial demands will naturally arise, even beyond those enumerated in the several items before us; in which case, a reduction to the amount thereof must be made in such articles as will best bear it; as we consider that it would be highly imprudent to go beyond the *net* sum proposed to be expended, in any case, unless it be one of absolute necessity.

To H. H. of the Isle of Wight we are much indebted; his whole letter is highly satisfactory, as it corroborates and illustrates our system, and affords much practical information. Such a document speaks whole volumes, and we regret that we are not at liberty to insert it. This gentleman is an officer on half pay, which is 4s. per diem, and produces him exactly 70l. per annum, exclusive of agency, &c. His family consists of himself, his wife, two children, and a maid-servant. The account was kept for six months, when the youngest child was from twelve to eighteen months old, and the other a girl about five years of age, who is half her time at school, as a weekly boarder; these children, and the servant, who is an adult, he considers as equivalent, in the computation, to three children. When his memorandums were made, he had not seen these Estimates, but kept the account

merely to know that they lived within their income. In some of the items we vary a little, but upon the whole, he expends between 4d. and 5d. per week more than our Estimate states. In one part of his letter, this gentleman writes thus :—" I consider the similarity of the two Estimates as really surprising, and highly satisfactory. It may be proper to remark, that we have been sensible of no deficiency of food ; my habits are sedentary and studious, but my appetite is always good, to which the sea-air probably gives additional force. The safe is not locked from the servant, and the children eat whenever they are hungry ; in short, there has been no particular attempt at saving, beyond that of having no company, committing no waste, and purchasing food of the plainest but best quality."

ESTIMATE IV.

Income, 5s. per day—30s. per week—78l. per annum.
Family—a Man and his Wife and three Children.

Provisions, weekly, with their Quantities and Prices.

	£	s.	d.
Bread and flour for five persons—24lbs.	0	3	9
Butter—2lbs. at 8½d.	0	1	5
Cheese—½lb. at 9d.	0	0	4½
Milk	0	0	7½
Tea—¼lb. at 5s.	0	1	3
Sugar—2½lbs. at 6d.	0	1	3
Grocery, &c.—including table condiments, as before	0	0	9
Meat, fish, &c.—say meat, 6lbs. at 6d.	0	3	0
Vegetables—per day, including 5lbs. of potatoes, at 3s. 6d. per cwt.	0	1	3
Beer	0	2	0
Coals and wood—average all the year round	0	2	0
Candles, &c.	0	0	4
Soap, starch, &c.—for washing	0	0	4
Sundries—for cleaning, scowering, &c.	0	0	2
Total for household expences	0	18	6
Clothes and haberdashery	0	5	0
Rent	0	3	0
Incidental Expenses	0	1	0
Total Expences	1	7	6
Saving, 1-12th	0	2	6
Amount of income	£1	10	0

Living in this manner, as the expence of each child is 1-12*th of the income, or* 2*s.* 6*d. and of each parent* 4-12*ths, or* 10*s. (see pp.* 7 *and* 8,*) this estimate may be applied to various other incomes and descriptions of families; thus:—*

For the man and wife only, 20s. weekly income.
——————— with 1 child, 22s. 6d.
——————————— 2 children, 25s.
——————————— 3 children, 27s. 6d. as per this estimate.
——————————— 4 children, 30s.
——————————— 5 children, 32s. 6d.
——————————— 6 children, 35s. and so on.

Reserving 1-12th, or 2s. 6d. for contingencies.

OBSERVATIONS.

We have to observe, respecting this Estimate, that it is practically correct, being almost a verbatim transcript from an account kept for the last year, by a steady person, whose accuracy and veracity we can rely on, and differing only a few shillings, in the whole year, from what we should have given as the result of our own calculations. Indeed, this, and the two following estimates, which are also derived from actual experience, serve to prove that the utmost confidence may be placed in the accuracy and practicability of our whole system, which is founded on facts, or corroborated by authentic information.

It is deserving of remark, that this family, though possessed of so slender an income, appears to live comfortably; doubtless from the regular mode of conduct which it has habitually acquired.

ESTIMATE V.

Income 5s. 6d. per day.—33s. per week.—about 86*l.* per annum.

Family,—a Man and his Wife, and three Children.

Provisions, weekly, with their Quantities and Prices.

	£	s.	d.
Bread and Flour, for five persons,—24 lbs.	0	3	9
Butter,—2 lbs. at 9d.	0	1	6
Cheese,—½ lb. at 10d.	0	0	5
Milk	0	0	8
Tea,—¼ lb. at 5s. 4d.	0	1	4
Sugar,—2¾ lbs. at 6d	0	1	4½
Grocery, &c.—as before	0	0	9½
Meat, Fish, &c.—say Meat 7 lbs. at 6d	0	3	6
Vegetables,—including 35 lbs. Potatoes, as before	0	1	4
Beer, or Table Ale	0	2	3
Coals, &c.—nearly 1½ Bushel on an average, at 1s. 4d. per Bushel, and Wood	0	2	1
Candles	0	0	4½
Soap, &c.—for washing	0	0	4½
Sundries,—for cleaning, scowering, &c	0	0	3
Total of Household Expenses	1	0	0
Clothes, Haberdashery, &c.	0	5	6
Rent	0	3	6
Incidents	0	1	3
Total Expense	1	10	3
Saving, 1-12th	0	2	9
Amount of Income, weekly	£1	13	0

Living at this rate, as each Child costs 1-12*th of the Income, or* 2*s.* 9*d. per week, and each Parent* 4-12*ths, or* 11*s. this Estimate becomes applicable to the following variations of Income and Family, viz.—*

	s.	d.	
Income for Man and Wife, only	22	0	per week
with 1 Child	24	9	
2 Children	27	6	
3 Children	30	3	as per this Estimate.
4 Children	33	0	
5 Children	35	9	
6 Children	38	6	and so on.
Reserving 1-12th or	2	9	for contingencies.

OBSERVATIONS.

This is another practical illustration of the correctness of our *data*, as it shews how the artificers and others of the metropolis, whose income is 5*s*. 6*d*. per day, might and *ought* to live so as to enjoy the greatest portion of comfort that can be derived from that Income. This we consider as a very useful Estimate, as it is applicable to the condition of a great number of individuals of the most valuable and industrious class of the community. Of two or three accounts given us last year, by persons of this description, but one of them was a regular weekly account, the others affording only averages, or varying in their weekly amount, according as the respective Incomes per week had been regular or not; neither of the parties having been provident enough to make any reserve, as a provision for loss of time, or any other contingency; but having lived, as is the common phrase, "from hand to mouth." This is a radical evil, the consequences of which will be continually felt by all persons who act thus. But, on the contrary, if out of such an income, one-twelfth, or one penny in a shilling, cannot be saved, as we recommend, would they save a half-penny only, or, at all events, make a point of saving some given sum, the good effects thereof would ere long become obvious and salutary.

It is evident that though the wages of an assistant or journeyman-tradesman be nominally 5*s*. 6*d*. a day or 33s. a week, yet he must, from a variety of causes, lose some time; and, therefore, we recommend that, if he reckon on an average loss of half-a day in a week, (2*s*. 9*d*.), he will regulate his expenditure by the fourth Estimate, or 30*s*. per week income; and if he lose a day, or nearly a day in a week on an average, he should live according to the third Estimate; and so on. The man who values his present happiness, or looks forward to a better condition in life, will follow this advice.

A clerk or other person, with such a family, having an income of eighty guineas a year, by acquiring a habit of living regularly, might live comfortably.

ESTIMATE VI.

Income, 6s. a day—36s. a week—about 94*l.* a year.
Family,—a Man, his Wife, and three Children.

Provisions, weekly, with their Quantities and Prices.

	£	s.	d.
Bread and Flour, for five persons,—24 lbs. at 2d	0	3	9
Butter,—2 lbs. at 9½d.	0	1	7
Cheese and Milk,—2d. a day	0	1	2
Tea,—¼ lb. at 5s. 8d.	0	1	5
Sugar,—3 lbs. at 6d	0	1	6
Grocery,—including Rice, Oatmeal, and Condiments	0	0	10
Butcher's-Meat, Fish, &c.—say Meat 8 lbs. at 6d.	0	4	0
Vegetables, including Apples, &c. for Puddings occasionally	0	1	5
Beer, a Firkin, or 9 Gallons, per month, at 5s. and Porter occasionally	0	2	6
Coals, &c.—(2 Chaldrons and 6 Bushels per year, at 48s.) and Wood, 8s. a year	0	2	2
Candles,—average all the year round	0	0	5
Soap, &c.—Soap, ½ lb. a week 4d. Starch and Blue 1d.	0	0	5
Sundries,—for cleaning, scowering, &c.	0	0	4
Total of Household-Expenses	1	1	6
Clothes, &c. (Man, 2s. 6d., Woman, 2s., Children, 1s. 6d.)	0	6	0
Rent	0	4	0
Extras (including Schooling for one Child)	0	1	6
Total Expense	1	13	0
Saving, 1-12th	0	3	0
Amount of Income	£1	16	0

OBSERVATIONS.

After the rate of this Estimate the expense of each child will be 3s. per week. Hence it will be seen that if the number of children in a family be more or less than three, the mode of living may be governed by the Estimates preceding or following, in an inverse ratio. Thus, with this Income, if there be only *two* children, instead of three, the Family may live after the rate of the seventh Estimate;—if there be only *one* child, instead of the three, they may live after the rate of the eighth Estimate;—and if there be only the man and his wife, they may live by the mode prescribed in the ninth Estimate: Or, if they please, they may live by this Estimate and *save* an additional 3*s.* per week for each child less than the three. On the contrary, if there be *four* children, instead of three, they will require 3*s.* per week more for their support, or they must live after the rate of the fifth Estimate; if they have *five* children, then the fourth Estimate must be their guide; if they have *six* children, they must live according to the third Estimate; and so on.

Thus, without material error, *this, and all the other Estimates,* may be adapted to *many different modes of living,* such as the varying circumstances may warrant, and according as the number of children may be more or less than the number given. This arrangement, together with the modes of variation given at the foot of each Estimate will afford an almost incalculable number of cases of Income and ways of living, to which our System may, with great facility, be practically applied.

The prudent manager of a family will readily conceive, that with small means, recourse must be had to plain and nourishing articles of food, instead of the more rich and expensive ones, and the great object is, to select the most efficacious and proper of those that are within reach. We have already found occasion to remark, that the Practical Economist will readily devise cheap and nutritive substitutes for articles of greater cost, and thereby evince a regard for the health as well as the comfort of the family.

We consider that any one of the many cheap and wholesome breakfasts that can be provided, for children, is better than tea, in all respects, if not for adults also. Tea, even of the best kind, has, perhaps, but little of that sustenance in it that either children or labouring adults require, and more especially the sloe leaves, ash leaves, and other noxious and pernicious trash, which are now, we find, unblushingly sold in all the chandlers' shops, and by the lower class of grocers, to their indigent customers, under the denomination of cheap black tea.*

In the course of our enquiries we have remarked that tea, for breakfast and in the afternoons, costs a family of the labouring class nearly three fourths of what their dinners and suppers cost.

Rational men—men who are lovers of their country and their kind—will note with regret that so great a portion of the hard-earned substance of the most valuable part of the community is thus wasted on an article which affords but little nourishment compared with our own indigenous productions, or the wholesome and substantial aliment of our robust ancestors.

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* We here allude chiefly to the lower kinds of Tea generally used by families in the middle classes of the community. For remarks on these and the superior sorts we refer to p. 94 and 95, in "*The New System of Practical Economy.*"

ESTIMATE VII.

Income, 6s. 6d. a day—39s. a week—101l. 8s. per ann.
Family,—a Man, and his wife, and three Children.

Provisions, weekly, with their Quantities and Prices.

	£.	s.	d.
Bread and Flour for five persons,—24lbs.	0	3	9
Butter,—2lbs. at 10d	0	1	8
Cheese 6d. and Milk 9d.—3d. each	0	1	3
Tea or Coffee,—say Tea, ¼lb. at 6s.	0	1	6
Sugar,—3lbs. at 6½d.	0	1	7½
Grocery,—including Oatmeal, Rice, Condiments, &c...	0	0	10½
Butchers'-Meat, Bacon, Fish, &c.—9lbs. Meat, at 6d...	0	4	6
Vegetables,—(including Garden-fruits, &c.)	0	1	6
Beer,—a Firkin, or 9 Gallons, per Month, at 6s., and Porter occasionally	0	2	9
Coals,—(2¼ Chaldrons a year, at 48s.,) and Wood 2d. per week, average	0	2	3
Candles,—on an average all the year round, about ¾lb. per week	0	0	5½
Soap,—½lb. per week, on an average, at 7d.—Starch and Blue	0	0	5½
Sundries,—for cleaning, scowering, &c.	0	0	5
Total for Household-Expences	1	3	6
Clothes, &c. (Man, 2s. 9d., Woman 2s., Children 1s. 9d.)	0	6	6
Rent	0	4	6
Schooling, and incidental Expenses	0	1	9
Total Expense	1	15	9
Saving, 1-12th	0	3	3
Amount of Income	£1	19	0

This Estimate affords a good practical lesson for a young couple who possess about £100. a year, and have 3 Children; and the comparative View, given at foot, (according to the Rule pp. 7 and 8,) will point out the degree of exertion necessary to be made, in proportion to the increase or expected increase of family, viz.:

Income for the Man and Wife only	26*s.*	0*d.*	per week.
With 1 Child.....	29	3	
2 Children....	32	6	
3 Children ..	35	9	
4 Children ..	39	0	
5 Children ..	42	3	
6 Children ..	45	6	and so on.
Reserve 1-12th, or	3	3	for Contingencies.

ESTIMATE VIII.

Income. 7s. a day—42s. a week—109l. per annum.
Family,—a Man, and his Wife, and three Children.

Provisions, weekly, with their Quantities and Prices.

	£.	s.	d.
Bread and Flour for five persons,—24lbs. at 2d.	0	4	0
Butter,—2lbs. at 10½d.	0	1	9
Cheese, 6½d.—Milk 9½d.	0	1	4
Tea or Coffee,—(nearly equal in expense).—say Tea, ¼lb. at 6s. 4d.	0	1	7
Sugar,—3lbs. at 7d.	0	1	9
Grocery,—including Spices, Condiments, &c.	0	0	11
Butchers'-Meat Bacon, Fish, &c.—10lbs. Meat, at 6d.	0	5	0
Vegetables, and Garden-fruits for Puddings, &c.....	0	1	7
Beer,—1 Firkin per month, at 6s. and Porter occasionally	0	3	0
Coals,—(as per last Estimate) and Wood 3d.	0	2	4
Candles,—nearly 1 lb. per week, on an average, all the year round	0	0	6
Soap,—more than ½lb. a week, on an average, with Starch, &c.	0	0	6
Sundries,—for cleaning, scowering, &c.	0	0	6
Total for Household Expenses	1	4	9
Clothes, (Man, 2s. 9d., Wife, 2s. 3d. Children, 2s.)....	0	7	0
Rent.....	0	5	0
Schooling, and Incidental Expenses	0	1	9
Total Expense	1	18	6
Saving, or Reserve, 1-12th.....	0	3	6
Amount of Income	£2	2	0

By this Scale of Expenditure, and by the proportions of expense laid down for the Parents and Children (pp 7 and 8,) this Estimate may be adapted to the following varieties of Income and family: viz.

Income, for the Man and Wife, only..... 28*s.* 0*d.* per week.
With 1 Child 31 6
2 Children .. 35 0
3 Children .. 38 6
4 Children .. 42 0
5 Children.. 45 6
6 Children .. 49 0 and so on.
Reserving 1-12th or 3 6 for Contingencies.

OBSERVATIONS.

We are professedly Economists, and on that principle we again strongly recommend that a strict regard be had to the object of *saving*, which should be attended to at all times, and now, as the income is considerably increased, may be effected without difficulty. The comfortable state of mind which this practice will naturally induce, is not, perhaps, one of the least of the many benefits that may eventually be derived from it; among other advantages it will enable the party to go to market with ready-money, and to purchase all unperishable articles of necessity at the best hand and at the lowest prices, which infallibly tends to the accumulation of the family comforts, and is, besides, a direct road to independence and happiness *.

We have not, in this Estimate, enumerated many articles of constant consumption in regular families, such as rice, oatmeal, &c. &c.; but these, being wholesome and nutritive articles of diet, must be had, though we scarcely consider them as adding much to the expense, as in most cases, and particularly when used with a view to economy, they will save bread and other things of greater value.

Beer is a necessary but expensive article; and we recommend it, even to small families, to brew at home, if only in small quantities, which can more easily be done than may be, at first, conceived; and it will not only save the Excise-duty on beer, and the brewer's profit, but it will afford the satisfaction of knowing that the beverage is sound and wholesome, which is not a trifling consideration. In country places most families *bake* as well as *brew* at home; both of which are very commendable practices, in every point of view.

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* For other remarks on this subject, see pp 383 and 384, also forward p. 33, &c.

ESTIMATE IX.

Income, 7s. 6d. a day—45s. a week—117l. per annum.
Family—a Man, and his Wife, and three Children.

Provisions, weekly, with their Quantities and Prices.

	£.	s.	d.
Bread and Flour, for five persons,—24lbs.	0	4	3
Butter,—2lbs. at 11d.	0	1	10
Cheese,—about ¾lb. at 10d.	0	0	7
Milk,—nearly 1½d day	0	0	10
Tea, &c.—¼lb. at 6s. 8d.	0	1	8
Sugar,—3lbs. at 7½d.	0	1	10½
Grocery, including Spices, Condiments, &c.	0	1	10½
Butcher's-Meat, Fish, &c.—say 11lbs Meat at 6d.	0	5	6
Vegetables, and Garden-fruits, for Puddings, &c.	0	1	8
Beer,—1 Firkin per month, at 6s. and Porter occasionally	0	3	3
Coals, &c.—(about 2½ Chaldrons of Coals a year, at 48s.) and Wood	0	2	5
Candles,—nearly 1lb. a week, on an average, all the year round	0	0	6½
Soap, &c.—¾lb. per week, with Starch and Blue	0	0	6½
Sundries,—for cleaning, scowering, &c.	0	0	7
Total of Household-Expenses	1	6	6
Clothes, (Man, 3s., Wife, 2s. 3d., Children, 2s. 3d.)	0	7	6
Rent	0	5	6
Extras, including Schooling	0	1	9
Total Expense	2	1	3
Saving 1-12th	0	3	9
Amount of Income	£2	5	0

By this Scale of living, and according to the proportions of Expense laid down for the Parents and Children (pp 7 and 8,) this Estimate may be adapted to the following variation of Income and different descriptions of family: thus—

Income for the Man and Wife only, ..	30*s.*	0*d.*	per week.
With 1 Child	33	9	
2 Children..	37	6	
3 Children..	41	3	as per this Estimate.
4 Children..	45	0	
5 Children..	48	9	
6 Children..	52	6	and so on.
Reserving 1-12th or	3	9	for Contingencies.

OBSERVATIONS.

As the Incomes to which this and all the preceding Estimates are appropriated, cannot be considered as sufficient to supply a family of five persons with every necessary of life in ample quantities and of the best qualities and prices, our object manifestly is, to make the most of the means we possess, and, by economy and good management, to furnish the several necessary articles required in proper quantities and of as good qualities as is possible, in all cases, or, to substitute those of inferior value for others more expensive, so as to provide a sufficiency of the best kinds that circumstances will allow. But, although we have, in most instances, given the exact quantities required, with their prices, yet it cannot, we conceive, be understood that these are unalterably fixed; but, on the contrary, if the amount be not exceeded, the quantities and qualities are to be varied at discretion.—For instance, though, in this Estimate, we state the quantity of sugar required to be 3lbs. at an average of 7½d. per lb.; yet, if more be wanted, on any occasion, 4½ lbs., at 5d. may be had, and will cost no more; again, we state 11lbs. of meat at an average of 6d. per lb., but if more be required, say 12lb. at 5½d. All we wish to be understood is, that though we vary, in these matters, as circumstances may require, we yet take care not to exceed the amount stated.

ESTIMATE X.

Income, 8s. per day—48s. per week—125l. per ann.—Family—a Man and his Wife, and 3 Children.

Provisions, weekly, their Quantities and Prices.

	£	s.	d.
Bread and Flour for five persons,—24lbs. at 2¼d. per lb.	0	4	6
Butter,—2lbs at 1s.	0	2	0
Cheese,—¾lb. at 10d.	0	0	7½
Milk,—1½d. per day	0	0	10½
Tea or Coffee,—say ¼lb. Tea, at 7s.	0	1	9
Sugar,—3lbs. at 8d.	0	2	0
Grocery, including Fruits, Spices, Condiments, &c.	0	1	0
Butcher's-meat, Fish, &c.—say 12lbs. at 6d.	0	6	0
Vegetables and Garden-fruits,—3d. a day.	0	1	9
Beer, Ale, &c.—6d. per day.	0	3	6
Coals,—2½ Chaldrons of Coals a year, at 48s. per chaldron, £6. and Wood 10s. a year	0	2	6
Candles,—1lb. a week on an average	0	0	7
Soap, Starch, &c. for washing	0	0	7
Sundries, for scowering and cleaning,—1d. a day	0	0	7
Total of Household Expenses	1	8	3
Clothes, (Man, 3s. 6d., Wife, 2s. 6d., Children 2s.)	0	8	0
Rent	0	6	0
Extra, (including Schooling)	0	1	9
Total Expense	2	4	0
Saving, 1-12th	0	4	0
Amount of Income	£2	8	0

By this Scale of Expenditure, and by the proportions of Expense laid down for the Parents and Children, (pp 7 and 8,) this Estimate may be applied to the following variations of Income and Family; thus,

Income for the Man and Wife only, 32s. per week.
with 1 child, 36s.
2 children, 40s.
3 children, 44s.
4 children, 48s.
5 children, 52s.
6 children, 56s. and so on.
Reserving 1-12th, or 4s. for Contingencies.

OBSERVATIONS.

We are now arrived, by a gradually progressive series of Practical Estimates, at that state of Income which will afford to a man with a wife and three children, an ample sufficiency of all the necessaries of life, but without any superfluity. We consider this Estimate of much importance, inasmuch as it exhibits the precise quantity, present price, and total expense of every article that can be required in such a family, if economically and regularly conducted; and beyond the amount of which they *need not spend one shilling per week*, whatever may be their income.

We cannot better illustrate this Estimate, than by giving a slight sketch of the economical arrangements of the family of the gentleman who furnished us with the principal particulars of this account; on the correctness and accuracy of which, and its consequent practicability, we have the utmost reliance, and do, therefore, recommend it with confidence.

He possesses a permanent income of 125*l.* a year; and he rents a neat little house, of six rooms, in the vicinity of London, the rent of which, with the taxes, &c. costs him about 35*l.* 10*s.* a year; out of which he receives 20*l.* a year for the first floor, and the occasional use of the kitchen; he consequently stands at about 15*l.* 10*s.* a year, or 6*s.* a week, for rent. His wife, knowing that *a small income will not admit of irregularity or inadvertency*, purchases all the unperishable articles of necessary consumption, in quantities, at wholesale prices, and as she knows how long they ought to last, she manages them accordingly. Candles and soap are laid in, for the year, in the summer time, when cheapest; and these articles, when kept in a dry place, become hard, fitter for use, and go farther. By getting a neighbour to join in the purchase of coals, they lay in their year's stock, consisting of a room, or five chaldrons, about August, when they are cheapest; and thus they get the ingrain, or three sacks over, upon that quantity. Half a ton of potatoes

laid in in October, and kept in a dry place, properly secured from the frost, serves the family till potatoes come next year. Traces of onions are bought in October, and hung up in a dry place to serve the winter. A firkin of good table-beer, at 7s. serves the family, as their beverage at meals, for about a month, besides which the parents occasionally drink porter. All the lesser branches of domestic arrangement are managed with the same steady view to regularity and economy; and thus they live happily and are much respected.

Reader! *go thou, and do likewise.*

PRACTICAL ESTIMATES

OF

HOUSEHOLD EXPENSES.

PART II.

CONTAINING

EIGHT ESTIMATES,

Adapted to Families possessing incomes of 150l. to 750l. per Annum; exhibiting, by a practical system of domestic arrangements, the best mode of acquiring the greatest portion of comfort and respectability that their respective incomes can command.

Independency may be found in comparative as well as absolute abundance, where a person contracts his desires within the limits of his fortune.

Anon.

PRELIMINARY OBSERVATIONS.

We now proceed to the Second Series of Estimates, which affords us the pleasing task of contemplating the best means by which families of a superior condition in life may best enjoy the greatest share of comfort and respectability that their respective stations demand, and their incomes will allow.

We shall have no occasion for any particular observations on this Series of Estimates, because the remarks we have already made, in the First Series, and those intended to be introduced in the Third Part, together with the more expanded and general views of every subject applicable to this purpose, that are to be found in the body of this work, (and to which we occasionally refer) will be amply sufficient.

By a Note in the introduction to these Estimates, we have made particular reference to the ninth Section, on Housekeeping (p. 380), because we have there fully expatiated on the necessity and great advantages of regularity in all accounts of receipts and disbursements,—of the value of independence in money transactions,—of dealing for ready-money; and of other matter intimately connected with, and more particularly explanatory of, our primary object: namely,—the regular and economical arrangement of domestic concerns, as tending, generally, to ameliorate and improve the present condition, and ultimately to promote the best interests and permanent happiness of such as may be induced to think favourably of our endeavours, and to act conformably to them.

ESTIMATE I.

Income, 150l. per Annum.

Family,—A Gentleman, his Wife, and Three Children.

Provisions and other Articles of Household-Expenses	*Weekly.* £	*s.*	*d.*	*Annually.* £	*s.*	*d.*
Bread and Flour, for 5 persons,—1s. each	0	5	0			
Butter—½lb. each=2½lbs. at 1s. pr. lb.—6d. each	0	2	6			
Cheese,—1lb. at 10d.,—2d. each.....	0	0	10			
Milk, &c.—2½d. each.....	0	1	0½			
Tea, Coffee, &c.—¼lb. Tea, at 8s. per lb.....	0	2	0			
Sugar,—3½lbs. at 8d. on an average—4d. a day	0	2	4			
Grocery,—including Spices, Condiments, Pickles, &c.—4d. each.....	0	1	8			
Meat, Fish, &c.—say 14lbs. Meat, at 6½d. per lb.—1s. 1d. a day	0	7	7			
Vegetables and Garden Fruits,—5d. each....	0	2	1			
Beer and Ale,—6d. a day	0	3	6			
Coals and Wood—Coals, 2¾ chaldrons per annum, at 48s.—and Wood 11s. per annum..	0	2	9			
Candles,—65lbs. a year, at 7s. per dozen—about 1¼lb. a week.....	0	0	9			
Soap, Starch, &c. for Washing—1lb. Soap, at 7d., Starch, &c. 2d.....	0	0	9			
Sundries,—for cleaning, scowering, and other purposes—1d. a day..	0	0	7			
Total of regular Household-Expenses....	1	13	4½	86	15	6
Extra for Entertainments, Medicine, and other Incidents ...				3	14	6
Total of Household-Expenses.....				90	10	0
Clothes—(Man 10*l.*, Wife 8*l.*, Children 6*l.*).....				24	0	0
Rent, Taxes, &c.....				15	0	0
Education, Extra and Private Expenses.....				5	0	0
Servant, (Charing occasionally)				3	0	0
Total Expense.....				137	10	0
Reserve, 1-12th.....				12	10	0
Amount of Income.....				150	0	0

ESTIMATE II.

Income, 200l. per Annum.

Family,—A Gentleman, his Wife, Three Children, and a Maid-Servant.

Provisions and other Articles of Household-Expense.	*Weekly* £	s.	d.	*Annually.* £.	s.	d.
Bread and Flour, for six persons,—1s. each...	0	6	0			
Butter,—½lb. each=3lbs. at 1s. pr. lb.—6d. each	0	3	0			
Cheese,—1¼lb. at 10d. per lb.....	0	1	0½			
Milk,—2½d each	0	1	3			
Tea, Coffee, &c.—4½oz. Tea, at 8s. per lb....	0	2	3			
Sugar,—4lbs. at 8d. per lb. on an average	0	2	8			
Grocery,— including Spices, Condiments, Pickles, &c.—5d. each.....	0	2	6			
Meat, Fish, &c.—say 18lbs. Meat, at 7d.—1s. 6d. a day	0	10	6			
Vegetables, Garden-Fruits, &c.—5d. each....	0	2	6			
Beer and Ale,—9d. a day.....	0	5	3			
Coals and Wood,—Coals, 3¼ chaldrons, at 48s. and Wood, 13s. per annum	0	3	3			
Candles,—6½ dozen, at 7s. per dozen—average 1½lb. per week.....	0	0	10½			
Soap, Starch, &c.—for washing..... ...	0	1	0½			
Sundries,—for cleaning, &c. viz. Blacking, Black-Lead, Whiting, Sand, &c.	0	0	8			
Total of regular Household-Expenses....	2	2	9½	111	5	2
Extra for Entertainments, Medicine, and other Incidents				5	11	6
Total of Household-Expenses.....				116	16	8
Clothes—(Man 12*l.*, Wife 10*l.*, Children 8*l.*)				30	0	0
Rent, Taxes, &c.....				20	0	0
Education, Extra and Private Expenses				7	10	0
Servant-Maids' Wages..				9	0	0
Total Expense.....				183	6	8
Reserve, 1-12th.....				16	13	4
Amount of Income.....				200	0	0

ESTIMATE III.

Income, 250l. per Annum.

Family,—A Gentleman, his Lady, Three Children, and a Maid-Servant.

Provisions and other Articles of Household-Expense.	*Weekly.* £	*s.*	*d.*	*Annually.* £	*s.*	*d.*
Bread and Flour for six persons—1s. each..	0	6	0			
Butter,—3½lbs., at an average of 1s. per lb.—7d. each, or 6d. a day.....	0	3	6			
Cheese,—¼lb. each=1½lb. at 10d.—2½d. each	0	1	3			
Milk—3d. each.....	0	1	6			
Tea, Coffee, &c.—5 oz. Tea at 8s. per lb. .. .	0	2	6			
Sugar, &c.—4½lbs. at 8d.—6d. each.....	0	3	0			
Grocery,—including Spices, Condiments, &c. 6d. each	0	3	0			
Butcher's Meat,—18lbs. at 7d. per lb. ..... 0 10 6 Fish, &c. (6d. per day).. 0 3 6 } 2s. a day	0	14	0			
Vegetables and Garden-Fruits—6d. each.....	0	3	0			
Beer and other Liquors,— 1s. a day.....	0	7	0			
Coals and Wood,—3¾ chaldrons of Coals a year, at 48s.=9l., and Wood, 15s.....	0	3	9			
Candles, Oil, &c.—say 6½ dozen Candles a year, at 7s. per dozen—2lb. a week	0	1	2			
Soap, Starch, &c.—(8 dozen Soap a year, at 7s. per dozen), nearly 2 lbs. a week, and Starch, &c.—2d. a day	0	1	2			
Sundries,—for cleaning, scowering, &c.....	0	0	9			
Total for regular Household-Expenses...	2	11	7	134	2	4
Extra for Entertainments, Medicine, and other Incidents ..				7	11	2
Total for Household-Expenses.....				141	13	4
Clothes—(Gent. 15l., Lady 12l., Children 10l.)				36	0	0
Rent, Taxes, &c.....				25	0	0
Education, Extra and Private Expenses.....				10	10	0
Maid-Servant				16	0	0
Total Expense				229	3	4
Reserve, 1-12th.....				20	16	8
Amount of Income.....				250	0	0

ESTIMATE IV.

Income, 300l. per Annum.

Family,—A Gentleman, his Lady, Three Children, and Two Maid-Servants.

Provisions and other Articles of Household-Expense.	*Weekly.* £	*s.*	*d.*	*Annually.* £	*s.*	*d.*
Bread and Flour for seven persons—1s. each ...	0	7	0			
Butter,—4 lbs. at an average of 1s. per lb.....	0	4	0			
Cheese,—2 lbs. at 10d. per lb.....	0	1	8			
Milk, &c.—3d. a day, or 3d. each.....	0	1	9			
Tea, Coffee, &c.—5½ oz. Tea at 8s. per lb....	0	2	9			
Sugar,—5 lbs. at an average of 8d. per lb.....	0	3	4			
Grocery,—including Spices, Condiments, &c.—6d. each.....	0	3	6			
Butcher's Meat, 21 lbs. at 7d. per lb..... 0 12 3 / Fish, &c. (9d. per day) 0 5 3 } 2s.6d. a day	0	17	6			
Vegetables and Garden-Fruits—6d. each.....	0	3	6			
Beer and other Liquors—1s. 3d. a day.....	0	8	9			
Coals and Wood,—4¼ chaldrons of Coals, at 48s. =10l. 4s., and Wood 17s.....	0	4	3			
Candles, Oil, &c.—about 11 dozen Candles a year, at 7s.—2½lbs. a week, at 8d	0	1	5½			
Soap, Starch, and Blue, for Washing,—Soap 2¼lbs. at 7d. and Starch, 3d. —3d. a day....	0	1	7			
Sundries,—for cleaning, scowering, &c.....	0	0	5½			
Total for regular Household-Expenses....	3	1	9	160	11	0
Extra for Entertainments, Medicine, and other Incidents....				8	9	0
Total for Household-Expenses.....				169	0	0
Clothes,—Gent. 16l., Lady 14l., Children 12l.....				42	0	0
Rent, Taxes, &c.....				30	0	0
Education, Extra and Private Expenses.....				14	0	0
Two Maid-Servants—12l. and 8l.....				20	0	0
Total Expense.....				275	0	0
Reserve, 1-12th				25	0	0
Amount of Income				300	0	0

ESTIMATE V.

Income, 400l. per Annum,

Family,—A Gentleman, Lady, Three Children, and Two Maid-Servants, one Horse, and an occasional Groom.

Provisions and other Articles of Household Expense.	*Weekly.* £.	s.	d.	*Annually.* £.	s.	d.
Bread and Flour, for seven persons—1s. each...	0	7	0			
Butter,—4½lbs. at an average of 1s. per lb.....	0	4	6			
Cheese,—2½lbs. at 10d. per lb.....	0	2	1			
Milk, &c.—3½d. a day, or 3½d. each.....	0	2	0½			
Tea, Coffee, &c.—6 oz. Tea at 8s. per lb....	0	3	0			
Sugar,—5½lbs. at 8d. per lb. on an average....	0	3	8			
Other Grocery, including Spices, Condiments, &c.—7d. each.....	0	4	1			
Butcher's Meat, 24lbs. at 7d..... 0 14 0 } 3s. a day	1	1	0			
Fish, &c..... 0 7 0 }						
Vegetables, Garden-Fruits, &c.—7d. each.....	0	4	1			
Beer and Spirituous Liquors,—1s. 6d. a day...	0	10	6			
Coals and Wood,—5 chaldrons of Coals, per annum, at 48s.=12l.—Wood 20s. per annum, (for 2 fires).....	0	5	0			
Candles, Oil, &c.—13 dozen store Candles a year, at 7s.—average 3lbs. per week.....	0	1	9			
Soap, Starch, Blue, &c. for washing, about 12 dozen Soap a year, at 7s.=2¾lbs. a week, and Starch, &c.— 3d. a day..	0	1	9			
Sundries,—for cleaning, scowering, &c.....	0	0	11			
Total for regular Household-Expences....	3	11	4½	185	11	6
Extra for Entertainments, Medicine, and other Incidents....				10	1	10
Total for Household-Expenses..... ...				195	13	4
Clothes, &c.—Gent. 20l., Lady 17l., Children, &c. 15l.....				52	0	0
Rent, Taxes, &c.....				35	0	0
Education, Extra and Private Expenses.....				18	0	0
Two Maid-Servants, 15l. and 9l.....				24	0	0
Horse, and occasional Groom, (See Appendix, Table I.)				42	0	0
Total Expense.....				366	13	4
Reserve, 1-12th.....				33	6	8
Amount of Income..... ...				400	0	0

ESTIMATE VI.

Income, 500l. per Annum.

Family,—A Gentleman, Lady, Three Children, and Two Maid Servants, with One House and a Man Servant, out of the House.

Provisions and other Articles of Household-Expense.	*Weekly.* £.	s.	d.	*Annually.* £.	s.	d.
Bread and Flour, for seven persons—1s. each	0	7	0			
Butter,—¾lb. each=5¼lbs., at 1s.—9d. each	0	5	3			
Cheese,—3 lbs. at 10d. per lb	0	2	6			
Milk and Eggs—4d. each	0	2	4			
Tea, Coffee, &c.—6½oz. Tea, at 8s. per lb	0	3	3			
Sugar, &c.—6 lbs. at 8d. per lb. on an average	0	4	0			
Other Grocery of all kinds, including Condiments, &c.—8d. each	0	4	8			
Butcher's-Meat,—28lbs. at 7d. per lb. 0 16 4; Fish, &c. (14d. per day) 0 8 2 — 3s.6d. a day	1	4	6			
Vegetables, Garden-Fruits, &c.—8d. each	0	4	8			
Beer, Spirituous Liquors, &c.—1s. 9d. a day	0	12	3			
Coals, Coke, and Wood,—say 5¾ chaldrons Coals, at 48s.=13l. 16s, and Wood, 23s.	0	5	9			
Candles, Oil, &c.—about 15 dozen Candles a year, half stores and half moulds, average 6d. per lb.—say 3½lbs. a week,—4d. a day	0	2	4			
Soap, Starch, &c. for washing,—Soap, about 3¼lbs. at 7d., and Starch,—4d. a day	0	2	4			
Sundries,—for cleaning, scowering, &c.	0	1	0			
Total for regular Household-Expenses	4	1	10½	212	18	6
Extra for Entertainments, Medicine, and other incidents				14	4	2
Total for Household-Expenses				227	2	8
Clothes and Haberdashery—Gent. 24*l.*, Lady 21*l.*, Children 18*l.*, Sundries 2*l.*				65	0	0
Rent, Taxes, &c.				50	0	0
Education, Extra and Private Expenses				25	0	0
Two Maid-Servants—16*l.* and 12*l*				28	0	0
Man-Servant, (out of the House) and Duty				31	4	0
Horse, (as per Appendix, Table 1.)				32	0	0
Total Expense				458	6	8
Reserve, 1-12th				41	13	4
Amount of Income				500	0	0

ESTIMATE VII.

Income, 600l. per Annum.

Family.—A Gentleman, Lady, Three Children, One Man and Two Maid-Servants.—with two Horses.

Provisions and other Articles of Household-Expense.	*Weekly.* £. s. d.	*Annually.* £. s. d.
Bread and Flour, for eight persons—1s. each..	0 8 0	
Butter,—¾lb. each=6 lbs. at 1s. per lb. on an average—9d. each	0 6 0	
Cheese,—3½lbs. at 10d.....	0 2 11	
Milk and Eggs—4d. each.....	0 2 8	
Tea, Coffee, &c.—say Tea, 7 oz. at 8s. per lb.	0 3 6	
Sugar,—6½lbs. at 8d. per lb.	0 4 4	
Other Grocery of all kinds, (except Tea and Sugar) including Condiments, &c	0 5 4	
Butcher's-Meat,—32lbs. at 7d. per lb..... 0 18 8 Fish, &c..... 0 9 4 } 4s. a day	1 8 0	
Vegetables, Garden-Fruits, &c.—8d. each	0 5 4	
Beer, Spirituous Liquors, &c.—2s. a day.....	0 14 0	
Coals, Coke, Wood, &c.—6½ Chaldrons of Coals, at 48s.=15*l.* 12s.—Wood 26s.....	0 6 6	
Candles, Gas, Oil, &c.—about 17½ doz. Candles a year, half moulds and half stores, average 8s. per dozen—4 lbs. Weekly	0 2 8	
Soap, Starch, Blue, &c. for washing,—5d. a day	0 2 11	
Sundries,—for cleaning, scowering, &c.	0 1 1	
Total for regular Household-Expenses	4 13 3	242 9 0
Extra for entertainments, Medicine, and other Incidents ..		18 10 0
Total for Household-Expenses.....		260 19 0
Clothes and Haberdashery—Gentleman 26*l.*, Lady 24*l.*, Children 21*l.*, Sundries 4*l.*.....		75 0 0
Rent, Taxes, &c.		60 0 0
Education, &c.		16 0 0
Pocket and Private Expenses		16 0 0
Servants—Two Maid-servants, at 16*l.*, 14*l.*=30 0 0 One Man Servant, and Duty .....26 4 0 }		56 4 0
Two Horses, (as per Appendix, Table 1.)		65 17 0
Total Expense		550 0 0
Reserve, 1-12th		50 0 0
Amount of Income.....		600 0 0

ESTIMATE VIII.

Income, 750*l.* per Annum.

Family,—A Gentleman, his Lady, Three Children, One Man and Three Maid-Servants, with Two Horses.

Provisions and other Articles of Household-Expense.	*Weekly.* £	*s.*	*d.*	*Annually.* £	*s.*	*d.*
Bread and Flour, for nine persons—1s. each	0	9	0			
Butter,—7½lbs. at an average of 1s. per lb.	0	7	6			
Cheese,—½lb. each—4½lbs. at 10d	0	3	9			
Milk and Eggs—4d. each	0	3	0			
Tea, Coffee, &c.—say Tea, ¼lb. at 8s. per lb.	0	4	0			
Sugar,—7½lbs. at an average of 8d. per lb	0	5	0			
Grocery of all kinds (except Tea and Sugar,) including Condiments, &c.—9d. each	0	6	9			
Butcher's-Meat, 36lbs. at 7d.=21s.—Poultry, &c. 10d. 6d.—4s. 6. a day	1	11	6			
Vegetables and Garden-Fruits—9d. each	0	6	9			
Beer, Spirituous Liquors, &c.—2s. 6d. a day	0	17	6			
Coals, Coke, Wood, &c.—7½ Chaldrons at 48s. =18l., Wood 30s.—(3 fires, at 2s. 6d. each) ..	0	7	6			
Candles, Gas, Oil, &c.—about 22 doz. Candles, half moulds and half stores, at an average of 8s. per dozen—5lbs. per week	0	3	4			
Soap, Starch, Blue, &c—for washing, (about 22 dozen Soap a year, at 7s.)—5lbs. a week	0	3	6			
Sundries, cleaning, scowering, &c.—2d. a day	0	1	2			
Total for regular Household-Expenses	5	10	3	286	13	0
Extra for Entertainments, Medicine, and other Incidents				25	16	0
Total for Household-Expenses				312	9	0
Clothes and Haberdashery—Gentleman 31*l.*, Lady 30*l.*, Children 30*l.*, Sundries 5*l.*				96	0	0
Rent, Taxes, &c.				75	0	0
Education, &c.				22	10	0
Pocket and Private Expenses				22	10	0
Servants' Wages—Three Maids, at 16*l.*, 14*l.*, 10*l.*, a year..				40	0	0
One Man, as Groom and Footman, (including Livery and Duty).....				41	4	0
Two Horses, (See Appendix, Table I.)				65	17	0
Gig, or other two-wheel carriage, (See Appendix, Tab. II.)..				12	0	0
Total Expenses				687	10	0
Reserve 1-12th				62	10	0
Amount of Income				750	0	0

PRACTICAL ESTIMATES

OF

HOUSEHOLD EXPENSES.

PART III.

CONTAINING

SIX ESTIMATES,

From 1000l. to 5000l. per annum, and upwards, shewing how Gentlemen, by practical regulations, may best enjoy all the superior elegances of life which their respective fortunes can attain. In this part is also given a short and comprehensive Rule, shewing the proportions that all the branches of a Gentleman's establishment ought to bear to each other, and to the whole Income.

PRELIMINARY OBSERVATIONS.

It was remarked, by the celebrated Earl of Chesterfield, that "great fortunes frequently seduce their possessors to ruinous profusion."—Doubtless, many have been brought to feel distress, even in the midst of affluence, for want of a due attention to method and economical arrangement in the management of their affairs.

We do not offer these Estimates as the infallible result of perfect science, but as a methodical system of Practical Economy that may afford useful hints, and be conducive to the comfort and happiness of a large portion of individuals of superior rank, and to such as, from the present deterioration of landed and funded property—the depreciated value of money, and other causes, may find it necessary to make the most of their fortunes, in order to maintain their respectability in that sphere of society in which they have been accustomed to move.

We take it for granted, that every gentleman will think it incumbent on him to make a reserve of some portion of his Income, as a provision for unforeseen contingencies, or as a means of improving the future prospects of himself and his adherents. We have assumed that, *at least, ten per cent.*, or one-tenth part of the net Income, may be set apart for that purpose :—

Thus, from an Income of

£1000 a Year,	£100 being reserved,	leaves £900 to be spent.
1500	150	1350
2000	200	1800
3000	300	2700
4000	400	3600
5000	500	4500
10000	1000	9000, &c. &c.

But, though we have here presumed that a gentleman of 1000l. a year may make a reserve of one-tenth only, and consequently expend 900l., yet, as we have heretofore observed, prudential motives may induce him to

abridge his Expenditure to 800l. or even to a still less sum;—and so of the rest.

The principle of these Estimates is remarkably simple and perspicuous, the whole being comprehended under the following general rule, which affords a comparative view of the principal branches of Expenditure, in the proportions that they severally bear to each other, and to the whole expense; whereby any gentleman may be enabled to establish a practical system of Domestic Economy, according to his Income;—to detect any error that may have arisen in the management,—and to discover, at once, what part or parts he may best alter in order to increase or diminish the expense of any other part that may be desired.

RULE—Divide the whole Annual Income, be it what it may, into 100 equal parts, which may be appropriated to the several branches of the establishment in the following proportions, viz:—

36 per Cent. for Provisions and other Articles of Household Expense.
22 per Cent. for Servants, Horses, and Carriages.
12 per Cent. for Clothing, Haberdashery, and other incidental Expenses of that nature.
8 per Cent. for Education, Pocket, Private and other extra Expenses.
12 per Cent. for Rent, Taxes, and Repairs of House and Furniture.
10 per Cent. to be reserved for future contingencies.

100 Total.

From these Premises is deduced the following Table, by means of which this Rule may be adapted to any Amount of Income, viz. —

Annual Income.	HouseExp. 36 perCent.	Servants and Equip. 22 perCent.	Clothes,&c 12 perCent.	Rent, &c. 12 perCent.	Extras, 8 per Cent.	Reserve, 10 perCent.
1000l.	360l.	220l.	120l.	120l.	80l.	100l.
1500	540	330	180	180	120	150
2000	720	440	240	240	160	200
3000	1080	660	360	360	240	300
4000	1440	880	480	480	320	400
5000	1800	1100	600	600	400	500
10,000	3600	2200	1200	1200	800	1000

N.B.—10l. is One per Cent. on 1000l.—20l. is One per Cent. on 2000l.—30l. is One per Cent. on 3000l. and so on.

Recapitulating more minutely, the whole amount of income may, without any sensible error, be subdivided in the following manner:—

1. Household Expenses, viz.—
   - Provisions ..... 26 per cent.
   - Coals, Candles, Soap, &c..... 7
   - Extra, for Entertainments 2
   - Medicine and other Incidents .. 1

   } 36 per cent.
2. Servants and Equipage, viz.—
   - Horses and Carriages 10
   - Male Servants..... 8
   - Female Servants 4

   } 22
3. Clothes, &c. viz.—
   - Gentlemen's Clothes 4
   - Lady's ditto..... 5
   - Three Children's ditto..... 2½
   - Haberdashery, &c..... 0½

   } 12
4. Rent, Taxes, and Repairs, viz.—
   - Rent 8
   - Taxes and Repairs..... 4

   } 12
5. Extra Expences, viz.—
   - Education 4
   - Pocket Expenses 2
   - Private Expenses 2

   } 8
6. Reserve or Saving 10

Total .. 100 per Cent.

N.B.—These latter remarks are not given as a rule, but merely to shew, that by subdividing the different heads of Expense, Gentlemen may discover, with a tolerable degree of accuracy, what ought to be the cost in any inferior department.

ESTIMATE I.

Appropriate to an Income of 1,000l. per annum. The Family consisting of a Gentleman, his Wife, and three Children; with an Establishment of three Female Servants, a Coachman, and a Footman; in all *Ten Persons*—a Chariot or Coach, Phaeton, or other four-wheel Carriage, and a pair of Horses.

Expenses of the House, weekly.	£	s.	d.
Bread and Flour—for ten persons, at 1s. each	0	10	0
Butter—¾lb. each=7½lbs. at an average of 1s. per lb. 9d. each	0	7	6
Butcher's Meat—¾lb. per day, each, or 52½lb. at 6d. per lb. (2s. 7½d. each) £1 6 3 / Fish, Poultry, &c. (9d. a-day) 0 5 3 } 4s. 6d. per day ..	1	11	6
Beer or ale—1 quart each per day, or 17½ gallons at 8d. (1s. 2d. each)..... 0 11 8 / Other Liquors—1s. 4d. per day 0 9 4 } 3s. per day	1	1	0
Cheese—¼lb. each per week, or 5lbs. at 9d. (4½d. each)	0	3	9
Garden Fruits and Vegetables—(9d. each).....	0	7	6
Grocery of all kinds, (except Tea and Sugar) including Spices and Condiments—(9d. each)	0	7	6
Sugar—¾lb. each, per week, or 7½lb. average, 8d. per lb.—6d. each.....	0	5	0
Tea, Coffee, &c. (Servants finding their own Tea, &c.)	0	5	0
Milk and Eggs—(4½d. each).....	0	3	9
Total for Provisions, weekly, being 266l. 10s. per annum ...	5	2	0
Coals and Wood—Four Fires—2½ chaldrons of Coals each Fire, on an average all the year round, or 10 chaldrons, at 45s.=22l. 10s.—Wood, at the rate of 7s. to each chaldron of Coals, or 17s. 6d. to each fire, per annum, 3l. 10s.—2s. 6d. each fire per week	0	10	0
Candles, Gas, Oil, &c.—equal to 10lbs. Candles per week, on an average, all the year round—viz. 2lbs. moulds at 10d. and 8lbs. stores, at 8d.—(1s. per day).....	0	7	0
Soap, Starch, &c. for washing—6lbs. Soap, at 8d.=4s.—Starch, Blue, Mangling, &c. 1s. 3d.—(9d. per day)	0	5	3
Sundries for cleaning, scowering, &c.—(about 4d. per day)	0	2	3
	£6	7	0

Household Expenses, per week, 6l. 7s.=330l. per annum, or 33 per cent.		
Extra for Entertainments, per annum .. 20l.	2	
Medicine, Medical Attendance, and other Incidental Expenses.....	10	1
(Carried forward).	£360 per ann.	36 per cent.

ANNUAL EXPENSE.

	£.	s.	d.
1. Household Expenses (brought forward)—36 per cent.	360	0	0
2. Servants, Horses, and Carriages, 22 per cent.—viz.			
Coach or Chariot, (as per Appendix, Table II.) ..... £ 40 0 0			
Two Horses, (as per Appendix, Table I.) 65 17 0			
Two Male Servants, viz.—			
Coachman.....Wages £. 24 0 0			
Livery... 12 0 0 } 37 11 0			
Duty 1 11 0			
Footman and Groom, Wages 22 0 0			
Livery.. .11 17 0 } 35 8 0			
Duty.... 1 11 0			
Three Female Servants, viz.—			
Cook. 16 0 0			
House-Maid .....14 14 0 } 41 4 0			
Nursery-Maid..... .. ..10 10 0	220	0	0
3. Clothes, Haberdashery, &c. 12 per cent.—viz.			
The Gentleman ..... 4 per cent. 40 0 0			
Lady ..... 5 ..... 50 0 0			
Three Children ..... 2½ 25 0 0	120	0	0
Haberdashery, &c..... 0½ 5 0 0			
4. Rent, Taxes, and Repairs—12 per cent	120	0	0
5. Extra Expenses—8 per cent.—viz.			
Education ..... 4 per cent. 40 0 0			
Pocket Expenses .... 2 ..... 20 0 0	80	0	0
Private Expenses .... 2 ..... 20 0 0			
Total Expense, per annum ..	900	0	0
6. Reserve, or Saving, for Contingencies, 10 per cent.	100	0	0
Total Income.....	£1,000	0	0

NOTE.—Instead of a Coach or Chariot and a pair of Horses, with a Coachman, and another Man-Servant, as above-mentioned; a Curricle, Gig, or other two-wheel Carriage with *three* Horses, a Groom, and Footman, may be kept at about the same expense.

ESTIMATE II.

Applicable to a Fortune of 1,500*l.* per Annum, possessed by a Gentleman who has a Wife and Three Children, with an Establishment of Four Female Servants, and a Coachman, Groom, and Footman; in all *Twelve Persons*;—and a Coach or Chariot, Phaeton, or other Four-wheel Carriage; a Gig or other Two-wheel Carriage, and Three Horses.

Household Expenses, weekly.					£.	s.	d.
Bread and Flour—for 12 persons—(1s. each)					0	12	0
Butter—¾lb each=9lbs., average 1s. per lb.—(9d. each)					0	9	0
Butcher's Meat—¾lb. per day each, or 63lbs. at 6d. per lb. (2s. 7½d. each)	1	11	6d	7s. 6d. a day	2	12	6
Fish, Poultry, &c.—(3s. a day)	1	1	0				
Beer or Ale—1 quart Ale each per day, or 21 gallons, at 8d.	0	14	0	5s. per day	1	15	0
Other Liquors—(3s. per day)	1	1	0				
Cheese—¼lb. each=6lbs. average 10d. per lb. (5d. each)					0	5	0
Garden-Produce—Gardener, 3 days, at 3s. 6d.=10s. 6d. and Duty 1s. 6d.—(1s. each)					0	12	0
Grocery of all kinds, (except Tea and Sugar)—10d. each					0	10	0
Sugar—¾lb. each, or 9lb. viz. 3lbs. at 1s.—and 6lb. at 8d.—7d. each					0	7	0
Tea, Coffee, &c.—(Servants finding their own)					0	6	0
Milk and Eggs—5d. each					0	5	0
Total for Provisions, weekly, being 399*l.* per annum					7	13	6
Coals and Wood—6 Fires, (See Estimate I.) at 2s. 6d each					0	15	0
Candles, Gas, and Oil—equal to 2lbs. Candles per night on an average all the year round=14lbs., at 9d. per lb. average—1s. 6d. a day					0	10	6
Soap, Starch, Blue, &c. for washing—1s. per day					0	7	0
Sundries for cleaning, scowering, &c.					0	4	6
					£9	10	6

Total of House-Expen. 9l. 10s. 6d. per week, or £495 per ann.		33 per cent.
Extra, for Entertainments	30	2
Medicine, Medical Attendance, &c.	15	1
(Carried forward)	540	36 per cent.

ANNUAL EXPENSE.

	£.	s.	d.
1. Household-Expenses (brought forward)—36 per cent. ..	540	0	0.
2. Servants, Horses, and Carriages—22 per cent.—viz.			
Coach or Chariot, &c. (as per Appendix, Table II.) ..... £. 40 0 0			
Tilbury, Chaise, Gig, or other 2-wheel Carriage, drawn by one Horse, (ditto) 12 0 0			
Three Horses, (as per Appendix, Table I.).. 101 0 0			
Three Male-Servants, viz.—			
Coachman 26 wages, 16 livery, duty 2 3 6, 44 3 6			
Groom .. 24 wages, 13 livery, duty 2 3 6, 39 3 6 } 123 10 6			
Footman 24 wages, 14 livery, duty 2 3 6, 40 3 6			
Four Female Servants, viz.			
Cook .... £ 17 0			
House-Maid ..... 15 0 } 53 10 0			
Second Ditto 12 0			
Nurse-Maid 9 10			
3. Clothes, Haberdashery, &c.—12 per cent. viz.			
The Gentleman.... 4 per cent..... 60 0 0			
Lady ..... 5 ..... 75 0 0			
Three Children..... 2½ 37 10 0			
Haberdashery, &c.— 0½ 7 10 10			
4. Rent, Taxes, and Repairs, &c.—12 per cent.	180	0	0
5. Extra Expenses—8 per cent.—viz.			
Education ..... 4 ..... 60 0 0			
Pocket Expenses .... 2 ..... 30 0 0			
Private Expenses.... 2 ..... 30 0 0			
Total of Expense....	1350	0	0
6. Reserve for Contingencies—10 per cent.	150	0	0
Total Income....	£.1,500	0	0

ESTIMATE III.

Adapted to an Income of 2000l. per annum. The Family consisting of a Gentleman, his Lady, and three Children; with an Establishment of Five Male and Five Female Servants; in all *Fifteen Persons*;—a Coach, Chariot, Phaeton, or other Four-wheel Carriage; a Tilbury, Chaise, Gig, or other Two-wheel Carriage, and Five Horses.

Household Expenses, weekly.	£.	s.	d.
Bread and Flour—for 15 persons—1s. each	0	15	0
Butter—7-8ths of a pound each, or 12½lbs.—average 1s. per lb.—10d. each	0	12	6
Butchers'-Meat—1lb. per day each, or 105lbs. at 6d.—(3s. 6d. each) £2 12 6; Fish, Poultry, &c. (3s. per day) 1 1 0 } 10s. 6d. a day	3	13	6
Beer or Ale—1 quart a day each, or 26¼ gallons, at 8d. (1s. 2d. each) 0 17 6; Other Liquors—(4s. 6d. a day) 1 11 6 } 7s. per day	2	9	0
Cheese—½lb. a week each, or 7½lbs at 10d.—5d. each	0	6	3
Garden Produce—Gardener's Wages 15l. 15s., Duty 2l. 9s. (exclusive of Board, 8s.) making in all 15s. per week	0	7	0
Grocery of all kinds (except Tea and Sugar)—1s. each	0	15	0
Sugar—7-8ths of a pound each, or 13lbs. viz. 4lb. at 1s., and 9lbs. at 8d.—(8d. each)	0	10	0
Tea, Coffee, &c.—1s. a day	0	7	0
Milk and Eggs—the produce of 2 Cows and Poultry (6d each)	0	7	6
Total for Provisions, weekly, being 527l per annum	10	2	9
Coals and Wood—8 Fires (see Estimate I.)—each Fire, per week, 2s. 6d.	1	0	0
Candles, Gas, and Oil—equal to 3lbs. Candles per night on an average, or 21lbs., at 9d.—(2s. 3d. per day)	0	15	9
Soap, Starch, Blue, &c. for Washing—(1s. 6d. a day)	0	10	6
Sundries for cleaning and scowering	0	5	0
	£12	14	0

Total, 12l. 14s. per week, which is 660l. per annum, 33 per cent.

Extra, for Entertainments	40	2
Medicine and Medical Assistance, &c.	20	1
(Carried forward)	£720	36 per cent.

ANNUAL EXPENSE.

	£	s.	d.
1. Household Expenses, (brought forward)—36 per cent.....	720	0	0
2. Servants, Horses, and Carriages—22 per cent.—viz.			
Coach or other four-wheel Carriage, (as per Appendix, Table II.) ..... £ 40 0 0			
Tilbury, Chaise, Gig, or other two-wheel Carriage, (as per ditto)..... 12 0 0			
Five Horses, (as per Appendix, Table I.).. 174 5 0			
Five Male-Servants, viz:			
Wages £ / Livery £ s. / Duty £ s.			
Coachman ..... 29 / 19 0 / 2 9 — 50 9 0			
Groom ..... 25 / 14 14 / 2 9 — 42 3 0	440	0	0
Assistant in the House & Stable 10 / 0 0 / 2 9 — 12 9 0			
Footman..... 25 / 15 0 / 2 9 — 42 9 0			
Kitchen Gardener, (see Household Expenses)			
Five Female-Servants, viz.—			
Cook and Housekeeper.. 18 18 0			
House-Maid..... 16 0 0			
Second ditto ..... 12 0 0 — 66 5 0			
Nurse..... 12 0 0			
Kitchen-Maid 7 7 0			
3. Clothes, Haberdashery, &c.—12 per cent.—viz.			
The Gentleman....4 per cent..... 80 0 0			
Lady.....5..... 100 0 0			
Three Children. ....2½..... 50 0 0	240	0	0
Haberdashery, &c...0½..... 10 0 0			
4. Rent, Taxes, and Repairs—12 per cent.....	240	0	0
5. Extra Expenses—8 per cent.—viz.			
Education.....4 per cent..... 80 0 0			
Pocket Expenses....2..... 40 0 0	160	0	0
Private Expenses ...2..... 40 0 0			
Total of Expense....	1800	0	0
6. Reserve, for Contingencies—10 per cent..... ...	200	0	0
Total Income..	£2,000	0	0

ESTIMATE VI.

Appropriate to an Income of 3,000*l.* per annum. The Family consisting of a Gentleman, his Lady, and Three Children; with an Establishment of Eight Male and Eight Female Servants; in all *Twenty-one Persons*;—a Coach or Chariot, &c. a Curricle, and Six Horses.

Household Expenses, weekly	£	*s.*	*d.*
Bread and Flour—for twenty-one Persons 1s. each	1	1	0
Butter,—1lb. each, or 21lbs. at an average of 1s. per lb.—1s. each	1	1	0
Butcher's-Meat,—1lb. per day each, or 147lbs. at 6½d. per lb. (3s. 9½d. each)..£3 19 7½ } 15s. per day Fish, Poultry, &c.—3s. 7½d. a day 1 5 4½ }	5	5	0
Beer—1 quart each, per day, or 36½ gallons, at 8d. (1s. 2d. each)....£1 4 6 } 11s. per day Other Liquors—(7s. 6d. per day)....2 12 6 }	3	17	0
Cheese, -½lb. each per week, or 10½lbs. at 10d. per lb. average 5d. each.	0	8	9
Garden-Produce—Gardener's Wages 26*l.*, Duty 2*l.* 16s. (exclusive of board 9s., making in all 20s. per week)	0	11	0
Grocery of all kinds, (except Tea and Sugar)—1s. each.....	1	1	0
Sugar,—1lb. each per week, or 21lbs., viz. 5lbs. at 1s., and 16lbs. at 8d.—(9d. each)	0	15	9
Tea, Coffee, &c.—(Servants finding their own).....	0	9	0
Milk and Eggs—the Produce of 2 Cows, and the Poultry—(7d. each).....	0	12	3
Total for Provisions, weekly, being 784*l.* 11s. a year....	15	1	9
Coals and Wood—12 Fires, (See Estimate I.) each 2s. 6d. per week	1	10	0
Candles, Gas, and Oil,—equal to 4lbs. Candles per night, or 28lbs. at 9d. per lb.—average 3s. a day.....	1	1	0
Soap, Starch, Blue, &c. for washing—2s. a day	0	14	0
Sundries, for cleaning, scowering, &c.—2s. a day.....	0	14	0
	£19	0	9

Total, per week, 19*l.* 0s. 9d. which is 990*l.* per annum, or		33 per cent.
Extra, for Entertainments.....	60	2
Medicine, Medical Assistance, &c....	30	1
(Carried forward)....£1080 ditto		36 per cent.

ANNUAL EXPENSE.

	£	s.	d.
1. Household Expenses, (brought forward)—36 per cent. ..	1080	0	0
2. Servants, Horses, and Carriages—22 per cent.—viz.:			
Coach or other four-wheel Carriage, (as per Appendix, Table II.)	40	0	0
Curricle or other two-wheel Carriage drawn by two Horses, (as per ditto)	15	0	0
Six Horses, (as per Appendix, Table I.)	212	16	0

Eight Male-Servants, viz.—

	Wages	Livery	Duty.							
	l.	l.	l.	s.	d.	l.	s.	d.		
Coachman .	30	20	2	16	0	52	16	0		
Groom	25	16	2	16	0	43	16	0		
Second Do.	15	5	2	16	0	22	16	0		
Footman ..	25	16	2	16	0	43	16	0	278 12 0	660 0 0
Valet and Footman..	27	16	2	16	0	45	16	0		
Butler.....	44	..	2	16	0	46	16	0		
Gardener ..	20	..	2	16	0	22	16	0		

Kitchen Gardener (see Household Expenses.)

Eight Female-Servants—viz.

Housekeeper	18	18	0	
Lady's Maid	15	0	0	
Nurse	15	0	0	
Cook	18	18	0	113 12 0
House-Maid	16	16	0	
Second Ditto	10	10	0	
Laundry-Maid.....	10	0	0	
Kitchen-Maid	8	10	0	

3. Clothes, Haberdashery, &c.—12 per cent.—viz.					
The Gentleman	4	120	0	0	
Lady.....	5	150	0	0	360 0 0
Three Children.....	2½	75	0	0	
Haberdashery, &c.	0½	15	0	0	
4. Rent, Taxes, and Repairs,—12 per cent...					360 0 0
5. Extra Expenses—8 per cent.—viz.					
Education	4	120	0	0	
Pocket Expenses.....	2	60	0	0	240 0 0
Private Expenses	2	60	0	0	
Total of Expense..					2700 0 0
6. Reserve or Saving—10 per cent..... ;					300 0 0
Total Income....					£3,000 0 0

ESTIMATE V.

Adapted to an Income of 4,000l. per annum. The Family consisting of a Gentleman, his Lady, and Three Children: and the Household Establishment being Eleven Male and Eight Female Servants; in all *Twenty-four Persons*;—Eight Horses, a Coach, a Curricle, and a Chaise, or Gig.

Household Expenses, weekly.				£	s.	d.
Bread and Flour—for twenty-four persons 1s. each				1	4	0
Butter—1lb. each per week, or 24lbs. at 1s. average—1s. each..				1	4	0
Butcher's-Meat—1lb. per day, each, or 168lbs. at 7d. per lb. 4s. 1d. each £4 18 0						
Fish, Poultry, &c.—6s. per day 2 2 0			11. per day	7	0	0
Beer—1 quart each per day, or 42 gallons per week, at 8d.—(1s. 2d. each) 1 8 0						
Other Liquors—11s. per day..... 4 0 6			15s. 6d. a day	5	8	6
Cheese—¾lb. per week, each, or 18lbs. average 10d. per lb.—7½d. each.....				0	15	0
Garden-Produce—Gardener's Wages and Duty 36l. 8s. (exclusive of Board, 10s. per week)—making in all 24s. per week (1s. per head).....				0	14	0
Grocery of all kinds, (except Tea and Sugar)—1s. each				1	4	0
Sugar—1lb. each per week, or 24lbs. viz. 8lbs. at 1s. and 16lbs. at 9d.—10d. each				1	0	0
Tea and Coffee, &c.—(Servants finding their own).....				0	11	3
Milk and Eggs—the produce of three Cows and the Poultry—8d. each				0	16	0
Total, for Provisions, weekly, being 1031l. 11s. per annum....				19	16	9
Coals and Wood—16 Fires, (see Est. I.)—average of each Fire 2s. 6d. per week.....				2	0	0
Candles, Gas, and Oil—equal to 6lbs. Candles per night, or 42lbs, per week, at 9d.—average 4s. 6d. a day.....				1	11	6
Soap, Starch, &c. for washing—3s. a day				1	1	0
Sundries for cleaning and scowering.....				0	18	6
				£25	7	9

Total, per week, 25l. 7s. 9d. which is 1320l. per annum,		33 per cent.
Extra, for Entertainments.....	80	2
Medicine, Medical Assistance, &c.	40	1
(Carried forward)..	£1440	36 per cent.

ANNUAL EXPENSE.

	£.	s.	d.
1. Household Expenses (brought forward)—36 per cent. ..	1440	0	0
2. Servants, Horses, and Carriages—22 per cent. —viz.			
Coach or other four-wheel Carriage, convertible into any other kind of Carriage, by changing the body, (as per Appendix, Table II.)	43	3	0
Curricle or other two-wheel ditto, drawn by two Horses (ditto).....	15	0	0
Chaise, Tilbury, or other Carriage, on two-wheels, drawn by one Horse (ditto)	12	0	0
Seven Horses, (as per Appendix, Table I.)	252	7	0
Eleven Male-Servants, viz.—			

	Wages	Livery	Duty.					
	l.	*l.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*
Coachman	32	20	3	16	6	55	16	6
Groom ..	26	16	3	16	6	45	16	6
Second Do.	23	14	3	16	6	40	16	6
Under Do...	20	11	3	16	6	34	16	6
Footman ..	26	16	3	16	6	45	16	6
Under Do..	25	15	3	16	6	43	16	6
Valet	28	15	3	16	6	46	16	6
Butler	48	..	3	16	6	51	16	6
Gardener ..	25	..	3	16	6	28	16	6
Under Do...	24	..	3	16	6	27	16	6

	422	5	0	880	0	0
Kitchen Ditto (charged in Household Expenses)					
Eight Female Servants, viz.—					
Housekeeper	24	0	0		
Lady's-Maid	18	18	0		
Nurse.....	18	18	0		
Cook	21	0	0		
House-Maid	18	0	0		
Second Ditto	13	0	0		
Laundry-Maid	12	0	0		
Kitchen-Maid	9	9	0		
	135	5	0		
3. Clothes, Haberdashery, &c.—12 per cent.—viz.					
The Gentleman 4	160	0	0		
Lady 5	200	0	0		
Three Children ..... $2\frac{1}{2}$	100	0	0	480	0	0
Haberdashery, &c. .... $0\frac{1}{2}$	20	0	0			
4. Rent, Taxes, and Repairs—12 per cent.				480	0	0
5. Extra Expenses—8 per cent.						
Education 4	160	0	0			
Pocket Expenses 2	80	0	0	320	0	0
Private Expenses 2	80	0	0			
Total Expense ..				3600	0	0
6. Reserve or Saving—10 per cent.....				400	0	0
Total Income ..				£4,000	0	0

ESTIMATE VI.

Applicable to a Fortune of 5,000l. per Annum. The Family consisting of a Gentleman, his Lady, and Three Children; with an Establishment of Thirteen Male and Nine Female Servants; in all *Twenty-seven Persons;*—Ten Horses, a Coach, a Curricle, and a Tilbury Chaise, or Gig.

Household Expenses, weekly.				£	s.	d.
Bread and Flour—for twenty-seven persons—1s. each				1	7	0
Butter—1lb. each, or 27 lbs., at 1s.—1s. each				1	7	0
Butcher's Meat—1 lb. per day each, or 189 lbs. at 7d. per lb. (4s. 1d. per head)	£5	10	3			
Fish, Poultry, &c.—9s. 3d. a day	3	4	9	25s. per day.	8	15	0
Beer or Ale—2 quarts each, per day, or 94½ gallons, at 8d. (2s. 4d. per head)	3	3	0				
Other Liquors,—11s. per day	3	17	0	20s. per day.	7	0	0
Cheese,—¾ lb. per week each, or 20½ lbs. at 10½d. (8d. each)					0	18	0
Garden-Produce—Gardener's Wages and Duty 41l. 16s, (exclusive of Board, 11s. per week)—making in all 27s. per week (1s. per head)					0	16	0
Grocery of all kinds (except Tea and Sugar)—1s. each					1	7	0
Sugar—1 lb. each per week, or 27lbs. at 10d. per lb. on an average (10d. each)					1	2	6
Tea, Coffee, &c. (Servants finding their own)					0	14	0
Milk and Eggs—Produce of four Cows, and the Poultry—(9d. each)					1	0	3
Total for Provisions, weekly, being 1265l. 11s. per annum.					24	6	9
Coals and Wood—for 20 Fires, (See Estimate I.) average 2s. 6d. per week, for each Fire					2	10	0
Candles, Gas, and Oil—equal to 8 lbs. per day or 56lbs.—viz. 28lbs. at 10d. and 28lbs. at 8d. average 9d. 6s. a day					2	2	0
Soap, Starch, Blue, &c. for Washing—4s. a day					1	8	0
Sundries for cleaning, scowering, &c.—4s. a day					1	8	0
				£31	14	9

Total per week, 31l. 14s. 9d. which is 1650l. per annum,—		33 per cent.
Extra for Entertainments	100	2
Medicine, Medical Assistance, &c.	50	1
(Carried forward)	£1800	36 per cent.

ANNUAL EXPENSE.

	£	s.	d.
1. Household Expenses (brought forward)—36 per cent.	1800	0	0
2 Servants, Horses, and Carriages—22 per cent.—viz. Coach or other four-wheel Carriage, convertible into any other kind of carriage, by changing the body, [as per Appendix, Table II.) £43 3 0			
Curricle or other two-wheel Carriage, drawn by two Horses, (ditto) 15 0 0			
Tilbury, Gig, or other two-wheel Carriage, drawn by one Horse, (ditto) 12 0 0			
Ten Horses, (as per Appendix, Table I.)..... 377 10 0			
Thirteen Male Servants, viz.—			

	Wages.	Livery.	Duty.				
	l.	l.	l.	s.	d.	l.	d.	s.
Coachman .	33	21	3	16	6	57	16	6
Groom	27	16	3	16	6	46	16	6
Second do..	24	14	3	16	6	41	16	6
Under do. ..	21	12	3	16	6	36	16	6
Assistant ..	26	..	3	16	6	29	16	6
Footman ..	27	16	3	16	6	46	16	6
Under ditto	26	15	3	16	6	44	16	6
Valet	29	15	3	16	6	47	16	6
Butler	50	..	3	16	6	53	16	6
Gardener ..	27	..	3	16	6	30	16	6
Second do.	26	..	3	16	6	29	16	6
Under do. .	25	..	3	16	6	28	16	6

495 18 0

Kitchen ditto (charged in Household Expenses)

Nine Female Servants, viz.—

Housekeeper.....	26	0	0
Lady's Maid	21	0	0
Nurse	20	0	0
Cook.....	24	0	0
House Maid	18	18	0
Under House Maid.....	14	0	0
Laundry Maid.....	12	12	0
Kitchen Maid	10	0	0
Still Room Maid.....	10	0	0

156 10 0

1100 0 0

3. Clothes, Haberdashery, &c.—12 per cent.—viz.				
The Gentleman	4 per cent.	200	0	0
Lady	5	250	0	0
Three children	2½	125	0	0
Haberdashery, &c.	0½	25	0	0
			600	0 0
4. Rent, Taxes, and Repairs..12 per cent.			600	0 0
5. Extra Expenses—8 per cent.—viz.				
Education	4	200	0	0
Pocket Expenses ...	2	100	0	0
Private Expenses	2	100	0	0
			400	0 0
Total Expense			4500	0 0
6. Reserve, or Saving—10 per cent.....			500	0 0
Total Income ..			£5000	0 0

OBSERVATIONS

RESPECTING THE

THIRD SERIES OF ESTIMATES.

HAVING given the *rationale* or general principle, with practical illustrations, adapted to the various Incomes, from One to Five Thousand Pounds per annum, we now proceed to shew the *data* on which every article of Expense is founded.

OF BREAD.—It has been ascertained, in times of scarcity, that every adult person, having a due portion of other food, consumes more on an average than a quartern loaf of Bread in a week. We state the consumption at upwards of one-fifth more, including flour for pastry and the other purposes of a family. Bread is now sold by the pound in London, and its vicinity, to the distance of ten miles round; and the price of the finest Wheaten Bread is, at present, $2\frac{1}{4}$d. per pound: this is equivalent to about $9\frac{3}{4}$d. the quartern loaf, which weighs 4lbs. $5\frac{1}{2}$oz; therefore, in every family, the expense may be taken at 1s. per week, for each person, including children. In the country, the price of the quartern-loaf is from 8d. to 9d. At all times, 6lbs. of Bread per week, per head, may be considered as the average consumption in a family. For much useful information respecting Bread and Flour, see pp 185 to 192.

BUTTER.—Generally, in gentlemen's families, when the servants are subsisted on board wages, each is allowed after the rate of $\frac{1}{2}$lb. of Butter a week; but this is not sufficient; $\frac{3}{4}$lb. each is consumed in most families, and in great establishments more: and so we have stated it. The prices will vary according to circumstances, and the purposes for which it is required. At present, good Butter for all the ordinary purposes of a family, may be bought at 10d. or 11d., per pound; and the best fresh Butter at 14d. or 15d.; but, as a greater proportion will

be used of the former than of the latter, the average price for the whole consumption may be estimated at 1s. per pound.

BUTCHER'S-MEAT, FISH, POULTRY, and other Animal Food.—The Philosophical Economists of the Continent, improving on the suggestions of the late Count Rumford, have stated that ½lb. of animal food, per day, is fully sufficient for the support of one person; and of this position, the whole French nation may, perhaps, be adduced as a practical proof. But not to travel from home; we are well aware that even according to our English mode of living, that quantity of solid Butcher's-Meat, economically managed, may suffice, with the addition of Game, as generally seen at a gentleman's table; some Poultry bred in his own yard; and some Fish caught, perhaps, in his own domain. But it must be considered that Butcher's-Meat loses at least one-fourth part in dressing;* so that not less than ¾lb., as it comes from the market, can be deemed sufficient, nor even that, in large families where gravies, soups, &c. are much in request. The average price, taking roasting and boiling meat, of all kinds, together, may be reckoned at 6d. per pound; and at that price a good market-woman, with ready money, may now purchase good meat in the London markets. In distant country markets the average is much less.

BEER, ALE, AND OTHER LIQUORS.—The expense of Malt-Liquors, in all large families, is very considerable. In the country, therefore, and wherever conveniency can be had, it is of much importance to brew at home. The difference in point of expense, renders this a matter of prudence; besides which, it is the only sure means of obtaining a sound and wholesome beverage, which ought to be an object of primary consideration.

The following is the Expense of brewing an hogshead, or 54 gallons, of good Table-Ale, for family use, viz:—

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* See page 155.

	£	s.	d.
3½ bushels of Malt, at 7s. per bushel, or 3 bushels of Malt and 12lbs. Treacle, at 3½d. per lb.	1	4	6
2lbs. Hops, at 15d.	0	2	6
3lbs. (pints) Yeast*	0	0	0
	£1	7	0

This is 6d. per gallon, and the Beer is much superior in quality to that which the common-brewers call the best Table-Ale, and supply at one guinea and upwards per barrel. Beer, equal in strength to Porter, may be brewed at home for about 9d. per gallon; and very excellent home-brewed Strong-Beer will cost less than 1s. per gallon. We recommend that the water used for brewing be previously boiled for two hours, with bran; at the rate of one bushel of bran to ten gallons of water. The effect of this expedient on the water used for brewing will be highly beneficial. For more ample information respecting the best and most economical methods of brewing, and the management of Beer and other malt liquors, see p. 233 to 239.

Most gentlemen are aware that the best Red Port, equal to the vintage of 1815, may be purchased, Duty included, for 80l. per pipe, of 138 gallons; which will yield 54 dozens, wine merchants' bottles, at about 30s. per dozen. Cape and other light Wines, now much in request, even at genteel tables, may be bought at a price which will attract the attention of the Economist. Sherry and Lisbon, bought by the Pipe, will cost about 32s. per dozen, duty, bottles, corks, and every expense included. Home-made Wines, many of which are very good, and are much approved, may be made for 3s. 6d. or 4s. per gallon. Our remarks respecting foreign and British Wines and Spirituous Liquors, which will be found in the body of this work, (p. 239 to 251) preclude the necessity of saying more in this place.

* The yeast and grains will repay the expense of firing and all other incidental expenses.

VEGETABLES AND GARDEN FRUITS.—Where the income is 1000l. a-year and upwards, it is presumed that the family will have a country residence, to which a sufficiently productive garden is attached, to supply the house with these articles, at but little more than the expense of a gardener occasionally, or constantly, according to the extent of the family; and on this principle we have calculated the expense of these articles. On this subject, other useful remarks will be found in various parts of this work; principally in pp 151, 160, 186, 257, &c.

CHEESE, MILK, EGGS, &c.—On the foregoing principle, if a few acres of land be attached to the house in the country, they will afford an occasional run for the horses, and grass for as many cows as may be required to supply the family with milk, &c. When two cows are kept, it ought to be so contrived, that one of them shall be in full milk when the other is dry. The expense of each cow will not exceed two shillings and sixpence per week, taking the whole year together; and the average produce of milk from a good cow may be taken at eight quarts a-day. In the country, eggs are produced from the poultry-yard, at but little expense. In London, in the spring and summer, they may be bought, retail, at 20 or more for a shilling. Ample directions for the management of cows, milk, cheese, butter, and all the business of the dairy,—for the care of poultry, and the preservation of eggs, will be found under their respective heads, in the body of this work.

GROCERY of all kinds, except Tea and Sugar.—Under this head are included all kinds of dried fruits, spices, pickles, salt, pepper, and other condiments for the table, as well as rice, Scotch barley, &c. In purchasing these, the good economist will not only select the best in quality, but will purchase such quantities of the unperishable articles as can be had at wholesale prices, which is always the best way of going to market. She will also bear in mind the extent of income, and as a considerable portion of the expense of those articles must depend on

management, she will not suffer those of mere luxury to supersede such as must of necessity be had.

TEA, COFFEE, CHOCOLATE, COCOA, &c.—But little calculation is required respecting these; as in most families, all the servants, except those in the nursery, find their own tea and sugar, for which an adequate consideration is made to them in their wages. The expense, therefore, is only for the principals, and we presume that the sums stated in the several estimates will be sufficient. In families in which tea is allowed to the female servants, one pound will serve seven or eight persons a week very well, which is about two ounces a-week each. Coffee is a little, though but little more expensive than tea. Ample directions for choosing and using teas, may be found pp 94 and 96. Remarks on coffee, p. 97, and on the adulteration of black teas, of the more ordinary qualities, p. 94.

SUGAR.—Though the rule is, as has been already observed, that servants find themselves in sugar for their tea, yet in genteel families, the consumption of this article is considerable in other respects; and if to the ordinary expenditure for pastry and culinary purposes, be added the large quantities that may be required at certain seasons of the year, for preserves, confectionary, and home-made wines, &c. we may fairly estimate the consumption at full three quarters of a pound, and in great families, at one pound per week per head. With respect to the prices, the best lump sugar is now sold at 1s. per pound, and good at 10d. or 11d.; brown sugars at 6d. 7d. and 8d.; and thus, or nearly thus, we have stated them. On the choice of sugars, their properties, qualities, and uses, see p. 209 of this work.

COALS.—The price of this article depends much on situation. Our computation is made for London:* but

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* A petition from the inhabitants of the metropolis is now before Parliament, praying that the port duty of 9s. 4d. per chaldron, charged on all coals imported into London, may be remitted.

in most places, coals are much cheaper. In this and in every other instance, when the several average prices cannot be correctly ascertained, in consequence of local or other circumstances, we state those that are most generally applicable. All the fires in a large family will consume, on an average, full two chaldrons and a half of coals per annum. The kitchen fire will require by far the greatest portion daily, and it will be in use all the year round; whereas the other fires will not be wanted more than seven or eight months in the year, and some of them will not require more than a chaldron a-year each. Thus, an establishment requiring four fires (see Estimate I.) will consume ten chaldrons of coals per annum, which should be purchased at one time, in the summer, when cheapest, as thereby a gain of one chaldron in twenty, or half a chaldron in ten, (called the ingrain) will be obtained. We reckon WOOD at about one-sixth of the expense of coals, or 7s. to each chaldron, which is 17s. 6d. per annum, for each fire. No notice is taken of fires for washing, &c. as the cinders ought to be saved, which will be sufficient for those purposes. We refer our readers to pp 227, 228, and 232, for other observations respecting this article.

CANDLES, OIL, AND GAS.—It is difficult to calculate correctly the expense of these articles. We have reckoned on mould and store candles only, as being a medium between oil and gas on the one hand, and wax and spermaceti candles on the other; and the quantities stated will, we are persuaded, amply allow for the superior kind of light, when necessary. Oil and gas will probably be burnt in the offices and without doors. These are nearly equivalent in expense. Gas costs 4l. per annum for each light or burner. Respecting gas, and other kinds of artificial light, see p. 54, *et seq.*

SOAP, &c. FOR WASHING.—As the male servants are but seldom provided with washing in the house, the expense quoted under this head will be sufficient. On the economical use of soap, soda, &c. see the head LAUNDRY, p. 195.

SUNDRIES FOR SCOURING, CLEANING, &c.—This

head is meant to include or cover all incidental expenses of a trivial nature that may occur.

EQUIPAGE, &c.—Our remarks respecting servants, carriages, and horses, are given in the Appendix, which follows.

CHILDREN.—It is to be remarked, that under the head of household expenses, the children are considered as adults; that is, each child is reckoned, numerically, as a grown person. This, though it encreases the amount of each Estimate somewhat beyond the precise truth, yet as the several articles of provision are continually fluctuating, it will allow for any trifling increase of price that may occur, still keeping the total amount of this department of expense within the sum prescribed; and generally we have calculated our Estimates on this principle, which we consider as erring (if it be erring) on the right side; as it will be much better to find a *surplus* in hand at the end of the year, than a *deficiency*.

We have uniformly calculated on three children as belonging to the family, because it admits of the most simple and easy means of comparing the Estimates with each other; and for every child more or less than the three, about ten per cent. may be added or deducted, according to the amount of the income.

The extra two per cent. appropriated for entertainments, may be considered as a fund whence may be drawn any trifling expense that exceeds the general total of the household expenses, or into which may be resolved any surplus that may arise on particular articles; and the expense of entertainments, which for the most part is a matter of choice, may be regulated accordingly, leaving the proposed reserve of one-tenth entire, for contingent or particular purposes.

It will be understood, that no part of the annual income has ever been considered by us as applicable to the original cost or formation of an establishment, or of any increase or addition thereto, but solely for the maintenance or support of the household, and that the net annual income, whether arising from hereditary possessions, business, or from whatever other source, is to be applied to

the regular outgoings for family expenses exclusively; the purchase of houses, furniture, horses, equipage, or other additional property, being to be made by means of any fortuitous accession of property, or of the annual reserve for these and other contingencies.

It may be difficult to ascertain the precise difference between the scale of living in town and in the country; but every gentleman will easily discover the most material difference in this respect, betwixt that of his own province and that of the metropolis; to which our computations are for the most part appropriated. Perhaps it may fairly be assumed, in a general way, that the expense of an establishment in the country is one-fourth less than that of the same family in London, including even the expense of an occasional journey to London.

As a final remark, we beg leave to add, that though the quantities and prices given in these Estimates will be found generally correct, and such as may be relied on, yet as prices fluctuate, and as the wants and wishes of different persons are often different, allowances must be made, by adding a trifle to one article, and deducting it from another, and *vice versa;* nor will such alterations, we are persuaded, materially affect the gross amount of any of the Estimates.

We have availed ourselves of the numerous hints and facts communicated to us by many gentlemen, for the improvement of this new edition of the Estimates, which we acknowledge with gratitude; and as we shall continue our endeavours, with unabating attention, for their further improvement, in every future edition, we respectfully intreat the assistance of such gentlemen as are enabled by experience to furnish us with facts *for this desirable purpose.*

APPENDIX.

TABLE I.

ANNUAL EXPENSE OF HORSES.

ONE HORSE.	£	s.	d.	£.	s.	d.
Oats.—Three quarterns per day, making 5½ pecks per week, at 26s. per quarter. ...	0	4	6			
Hay.—About 1 truss and ½, at 3s. per truss, or 4*l.* 4s. per load.....	0	4	6			
Straw. –One truss per week.....	0	1	6			
Food, per week.....	0	10	6			
Forty-six weeks, in the stable, at 10s. 6d.....				24	3	0
Six weeks grass, in the Spring, at 5s.....				1	10	0
Food, per annum.....				25	13	0
Shoeing, Farriery, and incidental Expenses.....				1	18	3
Duty (for one Horse).....				1	8	9
Annual Loss, or Wear and Tear of the Horse—10 per cent. on its value—say 25*l*.....				2	10	0
Expense of the Horse, exclusive of the Groom and Stable Rent.....				31	10	0
Occasional Groom, 46 weeks, at 3s. 3d. per week, and Duty 10s.....				7	18	0
*Stable-Rent, 1s. per week..				2	12	0
				£42	0	0

N.B. The Standing of a Horse at Livery is 1*l.* 1s. per week, with 1s. per week to the Groom; but no additional charge is made for the standing of the Carriage, if any be kept.

TWO HORSES.							
Food, &c. as above, each.....	25	13	0..	51	6	0	
Duty.....	2	7	3..	4	14	6	
Shoeing, Farriery, &c. each ..	1	18	3..	3	16	6	
Loss, or Wear and Tear, of each Horse—10 per cent. on its value—say 30*l.* each..	3	0	0..	6	0	0	
							65 17 0

* This Expense will be saved in the Country, or where there is a Stable attached to the House. We state the Stable-Rent at 1s. per week, and if it be more in London, the Dung will probably pay the difference.

TABLE I. *continued.*

ANNUAL EXPENSE OF HORSES.

					£.	s.	d.	£.	s.	d.
THREE HORSES.										
Food, &c.	each	£25	13	0	76	19	0			
Duty	each	2	12	3	7	16	9			
Shoeing, Farriery, &c. ..	each	1	18	3	5	14	9			
Loss, or Wear and Tear—10 per cent. on their value—say 35l. each		3	10	0	10	10	0			
								101	0	6
FOUR HORSES.										
Food, &c.	each	£25	13	0	102	12	0			
Duty	each	2	15	0	11	0	0			
Shoeing, Farriery, &c. ..	each	1	18	3	7	13	0			
Loss, or Wear and Tear of each—10 per cent. on their value —say 40l. eaeh		4	0	0	16	0	0			
								137	5	0
FIVE HORSES.										
Food, &c.	each	£25	13	0	128	5	0			
Duty	each	2	15	9	13	18	9			
Shoeing, Farriery, &c. ..	each	1	18	3	9	11	3			
Loss, or Wear and Tear—10 per cent. on their value—say 45l. each		4	10	0	22	10	0			
								174	5	0
SIX HORSES.										
Food, &c.	each	£25	10	0	153	18	0			
Duty	each	2	18	0	17	8	0			
Shoeing, Farriery, &c. ..	each	1	18	3	11	9	0			
Loss, or Wear and Tear—10 per cent. on their value—say 50l. each		5	0	0	30	0	0			
								212	15	6
SEVEN HORSES.										
Food, &c.	each	£25	13	0	179	11	0			
Duty	each	2	19	9	20	18	3			
Shoeing, Farriery, &c. ..	each	1	18	3	13	7	9			
Loss, or Wear and Tear—10 per cent. on their value—say 55l. each		5	10	0	38	10	0			
								252	7	0

TABLE I. *continued.*

ANNUAL EXPENSE OF HORSES.

EIGHT HORSES.				£.	s.	d.	£.	s.	d.
Food, &c.	each	£25	13	0	205	4	0		
Duty.....	each	2	19	9	23	18	0		
Shoeing, Farriery, &c...	each	1	18	3	15	6	0		
Loss, or Wear and Tear—10 per cent. on their value—say 60l. each.....		6	0	0	48	0	0		
							292	8	0

NINE HORSES.				£.	s.	d.	£.	s.	d.
Food, &c.	each	£25	13	0	230	17	0		
Duty		3	0	9	27	6	9		
Shoeing, Farriery, &c. ..	each	1	18	3	17	4	3		
Loss, or Wear and Tear—10 per cent. on their value—say 65l. each.....		6	10	0	58	10	0		
							333	18	0

TEN HORSES.				£.	s.	d.	£.	s.	d.
Food, &c.		£25	13	0	256	10	0		
Duty	each	3	3	9	31	17	6		
Shoeing, Farriery, &c...	each	1	18	3	19	2	6		
Loss, or Wear and Tear—10 per cent. on their value—say 70l. each.....		7	0	0	70	0	0		
							377	10	0

ELEVEN, 12, 13, 14, 15, or 16 HORSES.				
Food, &c.	each	£25	13	0
Shoeing, Farriery, &c...	each	1	18	3
Duty	each	3	3	9
Wear and Tear—10 per cent. on the value of each horse—say 70l.....		7	0	0
		37	15	0*

* This sum multiplied by any number of Horses above ten will shew the total expense of that number.

This Table is computed according to the *present* prices of horse-provender, which, though higher by 20 or 25 per cent. than they have been for a considerable time past, may, probably, be considered as an average for some time to come.

The annual loss on each horse, occasioned by death, accident, disease, increase of age, and ordinary deterioration, is taken at 10 *per cent.* on its supposed value; this part of the expense may, therefore, be more or less, according to the *actual* value of each horse.

TABLE II.

ANNUAL EXPENSE OF CARRIAGES.

	£.	s.	d.
I.—A Chaise, Tilbury, Gig, or other Carriage, with less than four wheels, and drawn by one horse, —Duty	3	5	0
Repairs, and Wear and Tear of the Wheels and Carriage	6	3	0
Repairs, and Wear and Tear of the Harness, and other Incidental Expenses	2	12	0
Total	12	0	0
II.—A Curricle, or other Carriage, with less than four wheels, and drawn by two or more horses, —Duty	4	10	0
Repairs, and Wear and Tear of the Carriage and Harness, and other Incidental Expenses.....	10	10	0
Total	15	0	0

N. B.—Every other kind of Body, used with the same wheels, pays an additional Duty of 1*l.* 11*s.* 6*d.*

III.—A Coach, Chariot, Phaeton, or other Carriage, with four wheels ....Duty *	6	0	0
Repairs, and Wear and Tear of the Carriage....	26	0	0
Repairs, and Wear and Tear of the Harness, &c.	4	0	0
Whips, Brushes, Oil, and other Incidental Expenses.....	4	0	0
	40	0	0
Additional Duty for any other kind of body hung upon the same wheels †	3	3	0
Total	43	3	0

* An *additional Duty* of 6*l.* is imposed on every four-wheel carriage, if more than one such carriage be kept.

† A *further Duty* of 3*l.* 3*s.* is payable for every different kind of body used with the same wheels.

TABLE III.

DUTIES PAYABLE ON MALE SERVANTS.

No.	AT PER SERVANT. £. s. d.	TOTAL PER YEAR. £. s. d.
1	1 4 0	1 4 0
2	1 11 0	3 2 0
3	1 18 0	5 14 0
4	2 3 6	8 14 0
5	2 9 0	12 5 0
6	2 11 6	15 9 0
7	2 12 6	18 7 6
8	2 16 0	22 8 0
9	3 1 0	27 9 0
10	3 6 6	33 5 0
11	3 16 6	42 1 6

And 3*l.* 16*s.* 6*d.* each, for any greater number of servants.

N. B. BACHELORS pay *One Pound more, per annum, for each servant*, whatever may be the number kept.

TABLE IV.

DUTIES ON HORSES FOR RIDING OR DRAWING CARRIAGES.

NO.	PER HORSE. £.	s.	d.	PER ANNUM. £.	s.	d.
1 Horse	1	8	9	1	8	9
2	2	7	3	4	14	6
3	2	12	3	7	16	9
4	2	15	0	11	0	0
5	2	15	9	13	18	9
6	2	18	0	17	8	0
7	2	19	9	20	18	3
8	2	19	9	23	18	0
9	3	0	9	27	6	9
10	3	3	6	31	15	0
11	3	3	6	34	18	6
12	3	3	6	38	2	0
13	3	3	9	41	8	9
14	3	3	9	44	12	6
15	3	3	9	47	16	3
16	3	3	9	51	0	0
17	3	4	0	54	8	0

And so on, at the respective rates, for any number of Horses.

TABLE V.

DUTIES ON CARRIAGES WITH FOUR WHEELS.

NO.	PER CARRIAGE. £.	s.	d.	PER ANNUM. £.	s.	d.
1	6	0	0	6	0	0
2	6	10	0	13	0	0
3	7	0	0	21	0	0
4	7	10	0	30	0	0
5	7	17	6	39	7	6
6	8	4	0	49	4	0
7	8	10	0	59	10	0
8	8	16	0	70	8	0
9	9	1	6	81	13	6

And so on, at the same rate, for any number of such Carriages.

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