f. 1. *Nitrate of Potass* may occur in mineral waters in conjunction with sulphates and muriates; the former of which must be decomposed by acetate of barytes, and the latter by acetate of silver, before the nitrates can be estimated. After these previous steps, filter the water, then evaporate it to dryness, and treat the residue with alcohol; which dissolves the acetates, and leaves the nitre.

f. 2. *Nitrate of Lime* is detected by first concentrating the water, and separating the sulphates by alcohol; then filtering and distilling off the alcohol, and separating any muriatic acid by acetate of silver; afterwards, filtering again, evaporating to dryness, and dissolving the residue in alcohol, which must be also distilled off, and the dried residue dissolved in water. If oxalic acid detect lime in this solution, the mineral water contains nitrate of lime; the quantity of which may be estimated by precipitating with sulphuric acid, and calculating the quantity of lime contained in the sulphate; and for every 35 grains of lime setting down 100 grains of dry nitrate of lime.

f. 3. *Nitrate of Magnesia* is detected by nearly the same means; but to the last watery solution, instead of oxalic acid add potass, as long as any precipitate appears. Filter this solution; evaporate and treat the dry mass with alcohol. If a residue of nitre remains, the mineral water contained nitrate of magnesia.

Such is the general method of ascertaining the components of mineral waters, and the proportion of the ingredients contained in any particular water. To render the analysis complete, many minutiæ must necessarily be attended to; but the detail of these would far exceed the limits which a work of this kind can admit of; and, after all, much must depend upon the ingenuity and expertness of the operator.

No. III.

ON THE ART OF PRESCRIBING MEDICINES.

INDEPENDENT of the knowledge of diseases and the treatment of them, much of the success of the practitioner depends on circumstances connected altogether with the form in which the remedies are exhibited. In prescribing a medicine, even the best-calculated to fulfil the object of the practitioner, it is necessary to consider the age, sex, temperament, habits, and idiosyncracy of the patient, before the dose can be properly apportioned; and, as far as the medicine itself is regarded, the most convenient and agreeable form of exhibiting it, whether it should be given alone, or combined with other ingredients; and how far these are likely to impede, modify, or facilitate its operation. An attention to these circumstances is absolutely requisite to prevent the errors which too frequently occur in forming a prescription.

1. *Circumstances connected with the state of the patient. Age.* Here it must be observed, that the doses of the medicines described in the foregoing pages, are those adapted for an adult; but, as in the two extremes of life, childhood and old age, the body is weaker, and in early youth more susceptible of all impressions, these quantities cannot be administered with safety in every case; and thence the judgment of the prescriber must be exercised. Under ordinary circumstances, the following table, originally drawn up by Gaubius, may be considered as a sufficient guide for the young practitioner:

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Ages.	Proportional quantities.	Doses.
For an Adult,	Suppose the dose to be - - - ONE	or 1 drachm.
Under 1 year	Will require only - - - $\frac{1}{12}$	— 5 grains.
2 years	—— —— —— $\frac{1}{8}$	— 8 grains.
3 ——	—— —— —— $\frac{1}{6}$	— 10 grains.
4 ——	—— —— —— $\frac{1}{4}$	— 15 grains.
7 ——	—— —— —— $\frac{1}{3}$	— 1 scruple.
14 ——	—— —— —— $\frac{1}{2}$	— $\frac{1}{2}$ a drachm.
20 ——	—— —— —— $\frac{2}{3}$	— 2 scruples.
Above 21 ——	The full dose - - - - -	— 1 drachm.
65 ——	The inverse gradation of the above.	—— ——

Sex. — Although some women possess as much bodily strength and vigour of constitution as the majority of men, yet the general greater delicacy and sensibility of the female frame, at every period of life, require not only caution in apportioning the doses of active medicines, which should be less than those ordered for men of the same age; but the medicines themselves should be such as are likely to fulfil the indications required, without much violence. The state of the uterine system likewise must not be overlooked in prescribing for a female. Thus the employment of aloetic and drastic purgatives, Cinchona bark, sulphuric acid, and astringents, should be suspended during the period of the catamenia.

Temperament. — It is undoubtedly true, that persons of different temperaments or original conformations of body are differently affected by the operation of medicines. Stimulants more readily affect those of a sanguine than those of a phlegmatic temperament; and, therefore, smaller doses are required. In the phlegmatic, also, the bowels are generally torpid, and require both a description of purgatives and such doses of them to exite the proper peristaltic motion, as would induce either visceral inflammation, or be followed by an alarming state of debility, were they administered to those of a sanguine temperament. Hence the necessity of attending to this circumstance in prescribing.

Habits — have a considerable influence in modifying the operation of medicines. Persons addicted to the use of spirits, narcotics, and other stimulants, are less easily excited both by medicinal stimulants and narcotics; and the knowledge of the habits of a patient, as far as the exhibition of purgatives is concerned, is absolutely necessary for the prescriber, many people being in the almost daily habit of taking this class of remedies without consulting a medical practitioner. In the first of these cases, larger doses of stimulants and narcotics are required to produce the ordinary effects of these remedies; but in the second a change of the purgative usually taken will generally be sufficient. In the employment of medicines, also, which require to be long continued, the beneficial effect is soon lost if the doses be not increased.

Idiosyncracy. — Many persons have a peculiarity of disposition, unconnected with temperament, which renders them liable to be effected by substances, taken into the stomach, either in the form of food or of medicine, in a manner different from the majority of mankind. Such a state can be discovered only by accident or by time; but when it is known, it must be attended to by the practitioner. Instances in which opium proves deleterious in every form and dose, are not unfrequent. I knew a lady, in whom the smallest dose of squill exited an erythematic eruption over the whole body; spirit of turpentine, also, frequently produces a similar eruption; and many examples of the same kind might be quoted. But besides these guides in forming a prescription, the choice of the medicine must occasionally depend on the circumstance of the patient being more or less immediately under the eye of the prescriber. Thus, if the patient can be seen every day, or frequently, by the practitioner, the most active medicine which the nature of the case requires should be chosen; but if he cannot be frequently seen, or is not resident in the same place, the practitioner should choose a remedy of the same class, but less likely to have a sudden or violent effect. Thus in prescribing for ascites under such circumstances, Squill or Acetate of Potass, or Supertartrate of Potass, must be pre-

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ferred to Elaterium; for intermittent fever, Cinchona bark to the Arsenical solution; and so in other cases, when the patient is not under the eye of the prescriber.

2. *Of the Form and Composition of extemporaneous Prescriptions.* — In every prescription simplicity should be kept in view, and when one medicine will answer the intention of the prescriber, it ought to be preferred. The nauseous taste, however, and the other qualities of the great majority of drugs require the addition of others to modify their action: but, although medicines are more generally prescribed in a compound form, yet the practice of accumulating a great variety of ingredients in one prescription must be avoided.

Medicines exhibited in the fluid form operate sooner, and with more certainty, than in the solid state; but in choosing the vehicle or solvent, the taste of the patient ought not to be overlooked. Thus, for those to whom peppermint-water is not disagreeable, the nauseous taste of Sulphate of Magnesia is more completely concealed by that vehicle than any other; if Cinchona bark in powder be ordered, milk effectually covers its taste, provided the dose be taken the moment it is mixed; and if aloes, the most nauseous article of the materia medica, be prescribed in a fluid form, a solution of extract of Liquorice renders it by no means unpalatable. Medicines which, when given alone, produce griping, require the addition of aromatics to correct that quality, and, when they operate with violence, mucilages and demulcents are sometimes necessary to obtund their acrimony, or narcotics to moderate their action. In prescribing purgatives, it is also necessary to consider the particular part of the alimentary canal on which they more immediately act. Thus Rhubarb acts chiefly on the pylorous and duodenum, Aloes on the rectum, and Calomel and Jalap on the larger intestines. Another reason for ordering medicines, in a compound form, is the necessity of producing two or more effects at one time. Thus the same dose may be required, in a case of colic for example, to allay pain and to open the bowels; or, in fever, to determine to the surface, to allay irritation, and to produce sleep. But in combining medicines, care must be taken not to bring together incompatibles, or substances that decompose each other, or chemically combine, and, consequently, alter the nature of the mixture, or render it inert; unless the resulting compound be the remedy on which the practitioner relies. Thus acids and alkalies are incompatible, unless the neutral salt they produce be the remedy required; and astringent vegetable infusions and decoctions destroy the emetic and diaphoretic property of tartar emetic. Hence the necessity of a knowledge of chemistry to the medical practitioner.

In writing a prescription, the first object is the principal or most active ingredient, which is called the *basis;* the next the *adjuvans*, or that which is designed to promote the action of the basis; the third, the *corrigens*, or that intended to correct or modify its action; and the last, the *vehiculum*, or that substance in which the more active ingredients are to be exhibited, and which, consequently, gives the formula its peculiar character. It has been usually regarded as a proper rule in writing a prescription to place the basis first, and the other articles in the form in which they have been enumerated; but this must depend on the mode best fitted for compounding the medicine. Thus salts and other soluble solids should be placed before the menstruum in which they are to be dissolved: and volatile substances should always be placed last, as they are necessarily the last ingredients added in the manipulation of the compound. Finally, the names of each ingredient should be written at full length, in a legible hand, and the symbols of the quantities distinctly marked; and no prescription should pass from the hand of the prescriber, without being deliberately read over, and its correctness ascertained.

To facilitate the art of prescribing to the young practitioner, I have added a Table of Incompatibles, and a few examples of the usual Forms of extemporaneous Prescriptions.

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