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THE EDUCATION OF GARDENERS.

It would certainly not be difficult to name some men of eminence as gardeners, who, before they entered the booby, had no education beyond that of the primary school. They have acquired their practical knowledge in the only school in which it can be obtained—that of practical experience; and, so far as they have all supplemented this practical knowledge by learning the scientific principles that underlie its rules of thumb, they have only far to go by laboriously up-hill processes of self-tuition in the intervals of a busy life. It must, however, be borne in mind that in the case of many such gardeners, the primary school in question was across the Border, where primary education has long been far more complete than with us.

It would, on the other hand, we may safely say, be impossible to find one of these self-taught men of eminence who does not regret that he had not greater educational facilities in his youth. Taking a rational view of all the circumstances of the profession as they are, it is of little use to indulge in Utopian dreams of advanced education for all gardeners. That can at most apply only to a future generation; but it is well worth while to consider what practical steps might be taken in this direction at the present time. In doing so, we ought to bear in mind the requirements of those who are already starting in their careers, as well as of those who have their time before them. What seems to be wanted is, firstly, a sound rudimentary training in the three R's, necessary for all children alike, which need not occupy them beyond their ninth year; secondly, continuation schools, in which a certain degree of specialisation is desirable, which should occupy all a boy's time until he is thirteen, fourteen, or even fifteen; and thirdly, a systematic curriculum of classes which can be attended by any after those ages, whilst engaged in practical work.

The Primary School.

If parents sincerely wish their children to succeed in after life, they will certainly do their best to secure for them a sound grounding in those elementary subjects that are essential to all: they will send them to school early and regularly; and they will not be anxious to remove them prematurely. If our primary schools, on the other hand, are not hopelessly understaffed and inefficient, any wise child sent to them at six years old ought to be able to read and speak his own language distinctly and with ease, to write legibly, and to understand at least the first four rules of arithmetic before it is nine years old. As these are essential subjects they are here mentioned alone, without any reference to object lessons or kindergarten exercises, which may be most valuable in training the eye to observe and the hand to manipulate, but which should supplement, and can in nowise take the place of, the "three R's."
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THE CORTIFICATION SCHOOL.

So far, no special training is requisite for the future gardeners; any school call for effort or self-denial on the part of his parents in securing an education for him. After the boy has acquired the hardest rudiments of an education, however, he is still somewhat of a scholar, but it is important to remember that he could not be in constant attendance, unless he is more than usually industrious. This basis ought to be kept at school entirely until he is at least fourteen. During these five years, from nine to fourteen, there are many subjects which the future gardener should learn in common with other boys, and several others less "generally necessary to "education. It is not necessary that he should add to his arithmetic what has been called "the science of numbers," as it is a necessity that he should learn how to keep accounts, i.e., what is called compound addition, subtraction, multiplication and division, and perhaps also the elements of algebra.

Desirable as it is that every good citizen should know something of the history of his country, it is far more important for the budding horticulturist to get a sound knowledge of botany and geography. If he be well taught, he should get a clear grasp of the climatic characters of the various countries of the world, and of the general features of their vegetation, of their means of transport, trade routes, and merely political matters.

Then, again, though neither an acquaintance with French nor German, and still less Greek, is essential, it is at least highly desirable that he should learn some Latin, considering the large part language still plays in matters botanical. So, too, though he need not master Euclid's Elements of Geometry, it is most important that he should— as should every boy and girl—learn to draw. Some knowledge of geometrical drawing, the making of plans, and the use of surveying instruments, will be of the greatest practical value to him in after life, and a few lessons on perspective, if possible, will be of service in introducing him into any school curriculum, though it may at present be necessary in some cases in these subjects, and in some of those yet to be mentioned, to supplement the wide powers of our primary school teachers by some kind of peripatetic specialist.

Though, from motives of economy both of time and money, we have confined our ideal curriculum to the acquisition of such elementary knowledge as is essential, the value of a sound and practical education in practical sciences, is now agreed by all our leading authorities that, educationally no less than practically, some science should find a place in all elementary schools. It is a considerable advance as a principle that the teacher has convinced the present writer that this introduction to science should advance from the necessarily disconnected object-lessons of the kindergarten stage to an exegesis of connected general principles rather than to the separate catechetical study of the facts of various departments of science. In other words, I think connected lessons on what has of late years been called in this country "physical geography," preferable to such a miniature encyclopaedia of facts as M. Paul Bert's First Year of Scientific Knowledge. A skilful teacher can find means to individualise such a scientific course of exact observation and inference, such as are clearly set out in Prof. Huxley's Introductory Primer. The constitution and various states of matter, the mechanical powers, the various forms of energy, the natures of the chemical elements, the principles that underlie much of the sciences of heat, chemistry, meteorology, and even geology, and many of the other sciences that are used in science, can, by the use of numerous familiar illustrative examples, as is done in G. N. S. M. and New England Primary, be made intelligible to any boy between twelve and eighteen years of age, so that the very boy at the latter age should not understand the principles of a lever, a pulley, a thermometer, a barometer, a pump, and a still, and know something of the chemistry of air and water, and of the formation of soils.

But while the education of every boy would be the better for the introduction into it, at this stage of life, of some physiological knowledge, to be a gardener should have in addition some insight into elementary biology or natural history. It is not by any means essential that he should learn much as to the animal and vegetable kingdom in common use, but that he should know something of the action of green plants on the soil, the chemical requirements of plants in the way of food, the essentials for the germination of seeds, the processes of growth and seed-production, the relation of parasites and saprophytes to green plants, and of plants to animals. In other words, what he requires is general physiology, with a special knowledge of the growth and habits of plants as necessary to obtain specimens and to illustrate this subject in the country than in large towns; but there is no insuperable difficulty in teaching any of the subjects we have discussed so far, in a town school.

It may be a matter of surprise to some that no mention has hitherto been made of the study of botany. It is, of course, desirable for a gardener of five or six years old, dealing judiciously, from some of the excellent specimens given me by the Rev. George Henslow, of Hitcham, of making botanical for-school or recreation study—at least, at the outset.

I have found it possible to teach many of the distinctive characters of leaves and flowers to children of five or six years old, dealing judiciously, from some of the excellent specimens given me by the Rev. George Henslow, of Hitcham, of making botanical for-school or recreation study—at least, at the outset.

(The to be continued.)

NEW OR NOTEWORTHY PLANTS.

CYPRIPECTOM WOLTERIANUM, Kret., n. sp.*

The leaves are bright green above, with very slightly denser hieroglyphic markings and tessellations. The scape is about 1 foot high, and bordered on the edges with grey hairs. The two bracts are very different in size, and much shorter than the longer, brownish-purple ovary. The corolla is obovate, about 1 inch long, white inside, with a broad red stripe; the tube is pale whitish-green, half as long as the lip, and of particular interest. The petals prove the great resemblance it bears to Crypoptemum Wolterianum in shape and general appearance, but the colour of the basal region is quite different. They have not the large purplish-black spots of Crypoptemum Wolterianum, but in the upper margin the brownish white lips are like those of Crypoptemum barbatum, but without the hairs, and with numerous purplish dots on the disc; whilst the inferior rim of the petals is bright green, without any markings.

The lip is rather large for the size of the flower. It has converging borders to the basal part, with small shining warts, and very acute side-lobes; the general colour is purplish brown (more dirty-purplish than brown) with a number of numerous very small purple dots. The column has a staminate quite different from that of C. Wolter; it is oblong-obovate, with a tooth in the sinus, but the fringed appendage is distinct from C. Wolter; its colour is green, with a white border. The whole flower is quite destitute of hairs and cilia, and entirely glabrous. In short, the plant resembles Crypoptemum with the two principal petalrids, with a smaller inferior sepal, in the colour of the basal part of the petals, in its entirely different stamioide, and in its smoothness.

It is perhaps a natural hybrid between C. Wolter and another parent unknown to us. The stamioide, however, shows such a peculiar feature, and is so dissimilar to this organ in other Crypoptemums, that we must regard it as a natural moment as a true species. The habitat is to be kept secret for the present, but I can assert that it is not the native country of Crypoptemum Wolter. For myself, I was led to the information given to me by the importer. The flowers have all the grace of those of Crypoptemum Wolterii, and are of about the same size. I may add that the specimen which flowered at Magleberga, in M. T. W. Thunberg's collection was a very poor one, yet its flowers were in size and beauty equal to those of a normal C. Wolter. It is to be hoped that the flower will increase in beauty when brought to a native soil. Among the artificial hybrids of C. Wolter, viz., C. x calanthum, Rchb. f. (C. barbatum x C. Wolter), and C. macropterus, Rchb. f. (C. x Wolterii x pumilum), are not identical, being perhaps similar in many respects. F. Krsticke.

GREENHOUSE HARD-WOODED PLANTS.

(Continued from p. 79.)

MYRTLE.—Although in the more favoured and sunny districts of the south, and farther north where the warm influence of the Gulf Stream is markedly felt, the Myrtle may be safely grown against warm walls and even against hedges, it is safer to recognise them as greenhouse plants. Save in the point of less pruning being required by the plant, the culture is similar to that which is found to suit the Polyantha, except that the form of the plant must be regulated by stopping the short shoots, and water afforded more freely during the summer. A full exposure to sunshine is needed in order to secure a good display of blossoms. For growing into a large specimen plant, M. comn. in no doubt the best, more particularly if a standard is required; but if dwarf and compact plants are preferred then I would select M. angustifolia or the Box-leaved Myrtle—this variety will in warm districts be hardy on light soil, and in the small pyramids which will flower profusely during the autumn. Further south than London I used to grow both of these varieties on walls; but the only protection needed in the case of M. angustifolia was to bring them in when the snows became severe. Myrtus Ugni, or as it is used to be called, Eugenia Ugni, is grown...