telligent manner; and so far as the limits of his work allow, he introduces much interesting and appropriate information. In the selection, indeed, of the important and essential topics from an assemblage so extensive and multifarious as that of medical jurisprudence, Dr Traill has shown much skill and dexterity; and it is fortunate for the student that the preparation of a work so useful, and yet of so moderate pretensions, has been undertaken and accomplished by one so well qualified to do it justice. These outlines may indeed be recommended as presenting an excellent compendious view of the present state of the doctrines in medical jurisprudence; and they will serve as a useful guide not only for initiating beginners, but for conducting the student in his subsequent prosecution of the subject, either generally or in its divisions.

ART. VI.—*The Elements of Materia Medica; comprehending the Natural History, Preparation, Properties, Composition, Effects, and Uses of Medicines.* By JONATHAN PEREIRA, F. R. S., L. S. &c. &c. London, 1840. Part II. Pp. 561—1440.

THE first part of Mr Pereira's work on the *Materia Medica*, containing remarks on the general principles of classification, and detailed accounts of the inorganic substances used in medicine, was shortly noticed in the fifty-first volume of this Journal.

The present volume treats of the medicinal agents derived from the vegetable and animal kingdoms, arranged according to the natural system, commencing by those lowest in the scale of organization, and advancing to those of more perfect developement. It is unnecessary to remark the great superiority of this mode of arrangement over every other which could have been followed; yet it is a fact not a little strange, that this work is almost the only one in our language in which the natural classification has been adopted, and followed out in all its details. The late works on the same subject have in general failed to bring up the science to the level of the present day; but Mr Pereira's work has fully supplied this defect; and whether the minuteness and accuracy of the details, or the quantity and value of the information be considered, it must be regarded as the most valuable work on the *Materia Medica* which has yet appeared in this country.

The medicinal agents from the vegetable kingdom are distributed over eighty-one orders; those from the animal kingdom are arranged in ten classes; and the whole is illustrated by woodcuts, representing the general character of the plant or animal from which the me-

dicinal agent is derived. Several of these illustrations might with propriety have been spared, as for instance those of the organs of generation of the *Cantharis*, when the animal itself is not represented; that of the *Opuntia*, on which the cochineal insect feeds, whilst the insect itself is omitted; that of a cluster of uterine hydatids illustrative of the action of ergot, and many similar instances.

The volume commences with a tabular view of the history and literature of the *Materia Medica*, enumerating the various authors who have written on that subject, arranged according to the countries to which they belonged, or whose medicines they described.

The Cryptogamic plants are the first whose properties are enumerated; and it may be proper to mention that, in general, the various species of plants from which medicinal agents are derived are described under the following heads: History,—botanical character,—habitat,—description,—common composition,—chemical characteristics,—physiological effects,—uses,—and form of administration; and the information is both more minute, and embraces a greater number of points than is to be met with in any similar work in our language. Throughout the whole work a high compliment is paid to the editors of the last edition of the *Edinburgh Pharmacopœia*, their tests for ascertaining the purity of the various drugs being quoted in almost every instance with approbation.

The Carageen or Irish moss of commerce, Mr Pereira limits to one species, the *Chondrus crispus*; but though a large proportion certainly consists of this species, it is not the only one, the *C. mammillosus* being occasionally mixed with it in tolerably large quantity, and possessing in all respects similar properties. Other allied species have also been occasionally met with.

A very full account is given of the Gramineæ.

The growth of ergot is attributed to the presence of a parasitical fungus, whose sporidia become developed on the grain. Its earlier appearance is that of a white coating enveloping the young grain and its appendages, composed of a multitude of sporidia mixed with minute cobweb-like filaments. By the time the grain has extended above the paleæ, it has lost its white coating, and the production of sporidia and filaments has nearly ceased. At the upper portion of the grain, the coating presents a vermiform appearance, and is found, on examination, to consist of masses of sporidia. The mature ergot, however, presents scarcely any traces of filaments and sporidia.

From this opinion, Mr Wright,* one of the latest writers on the natural history and properties of ergot, dissents. He inclines to the opinion which ascribes the formation of the excrescence to the com-

* *Edinburgh Medical and Surgical Journal*, Vol. lii. October 1839. p. 293.

bined influence of atmospheric warmth and moisture. He is the more inclined to this belief, from the circumstance of the ergot being much more common in the district of Sologne than elsewhere, this district being possessed of those properties which favour such a conclusion, viz. moist rich soil, atmospheric warmth, and sheltered situation. Grains also occur, only one-half of which are ergotted, the other half being healthy; an insuperable objection to the opinion, that the ergot is produced by the growth of a fungus, which would equally attack all parts of the grain. Besides, from his own experiments, he found that ergot in powder or substance, sowed with rye, failed to produce the disease on the growing plant; nor did it even succeed when he watered freely and daily the growing plants with water, in which ergot had been steeped. The application of the powder of ergot to the growing ears of rye likewise failed to produce ergotted grains. The excrescences remarked at the upper extremity of the grains of ergot he regarded as the stigmata altered by disease. Mr Wright's conclusions were further confirmed by the fact of his discovery, that ergot contained a considerable quantity of fecula, 26 per cent., a substance which could not have been expected if the disease were produced by a fungus, and which Mr Wright has the merit of discovering, no previous analyst of the substance making mention of it.

Though the Edinburgh College admit but three varieties of aloes, no fewer than seven are described by Mr Pereira, viz. Socotrine, Hepatic, Barbadoes, Cape, Caballine, Mocha, and Indian aloes, each possessing external characters sufficiently distinct. The confusion which has arisen regarding the different kinds of this, and of other drugs occurring in commerce, may, in a great measure, be attributed to the authors of Dispensatories and similar works not taking the trouble to ascertain from the first houses the various kinds which are really brought into the market, and their sources. Mr Pereira's investigations in regard to this deserve all praise, and as instances of the assiduity and labour which he must have bestowed upon this subject, the articles Cinchona barks and Catechus may be referred to.

Five kinds of sarsaparilla are described as occurring in the drug-market, and some excellent remarks are made on the value of this article as a therapeutic agent. The author does not, like many, deny that it possesses therapeutic agency, because no physiological effect has been shown to follow its use.

In mentioning the adulterations to which arrow-root is subjected, it is remarked, that potatoe-starch, or English arrow-root, as it is called, is frequently substituted for it. The only test which he mentions for the detection of this adulteration is that of the microscopical examination of its particles, these being in the genuine arrow-root plane irregular spheres, but in the potatoe-starch hav-

ing their surfaces marked with concentric rings. A more simple test, and one more generally applicable, is the different external appearance of the two articles, potatoe-starch having a much more glossy or satiny appearance than arrow-root, which is of a duller white. Arrow-root, too, when made so consistent as to turn out in shapes like jelly, retains its form for hours or days, but potatoe starch scarcely retains its shape till cold, subsides considerably, and acquires a tenacious consistence, very widely different from the firm jelly-like consistence of arrow-root.

The different species of *Amomum* have apparently received considerable attention, and characteristic wood-cuts of each are given,—a circumstance which will make the deciphering of the species to which each variety belongs a much more easy matter than formerly.

A very full account is given of the *Coniferæ*, and of the various products obtained from them, as well as of the medicinal properties possessed by each of these agents, and the diseases in which they have been or may be employed. This portion of the work is well worthy of a careful perusal, as the numerous diseases in which these medicinal agents have been employed has been lately much extended.

In mentioning the *Jatropha Manihot* or Cassava plant, notice is taken of the singular fact that fermentation or heat destroys the poisonous properties of its juice. It seems not to be generally known that one of the most esteemed and most generally used of the native curries is prepared from the fermented root of the bitter Cassava in Demarara and the neighbouring isles, and eaten almost to every dish.

The narcotic qualities of the nutmeg are alluded to, and several cases quoted as illustrative of the fact. Little attention has hitherto been paid to the narcotic qualities of these fruits, and the few instances on record where such instances have occurred have almost been overlooked. Mr Pereira has not only observed narcotic effects produced by nutmegs, but has found them a useful substitute for opium in diarrhoea. In consequence of their possessing this narcotic property, he cautions the profession against their employment in all cerebral affections.

The question as to the identity of the species of *Rheum*, which yields the true rhubarb, Mr Pereira leaves still undetermined. His researches, no more than those of others, have been able to solve the question. It is quite possible, however, that our gardens possess the species which actually yields the finest Russian or Chinese rhubarb, the difference of soil and situation causing all that disparity which is observed in the roots produced in the two climates. Six kinds of rhubarb are described as occurring in commerce; Russian or Turkey, Dutch-trimmed, Chinese, Hima-

layan, English, and French. He denies that rhubarb exerts any specific influence over the biliary secretion; but the fact, that this medicine, when combined with magnesia and aromatics, is found to be one of the most useful purgative in all bilious affections, and is sufficient of itself to cure the complaint, must be regarded as presumptive proof, at least, that this medicine possesses to a certain degree such a power.

Some useful practical hints are given as to the best mode of employing digitalis; and the precautions to be attended to during its administration. The necessity of keeping strictly to the recumbent position when under its influence is strongly insisted on, as fatal syncope has resulted from suddenly assuming the erect posture. This Mr Pereira attributes to the digitalis so destroying the power of the heart as to prevent its impelling the blood to the brain with sufficient force to resist the power of gravity. He dissents from Dr Withering in what he asserted regarding the diuretic powers of digitalis, viz. that there was but little chance of any diuretic medicine succeeding if digitalis failed. Mr Pereira says he has often seen infusion of broom tops subsequently succeed; and is of opinion, that collections of aqueous fluid are removed, and its specific diuretic action induced by its acting on the kidneys, and not on the absorbents. The quantity of digitalis which may be given to a patient without destroying life is much greater than is generally imagined. One case is mentioned where 20 drops of the tincture were given to an infant labouring under hydrocephalus, three times daily for a fortnight, without any untoward symptom being induced. In a communication from Dr Clutterbuck, it is mentioned that Mr King, a practitioner in Suffolk, had for many years been in the habit of administering the tincture of digitalis in from one-half to one ounce doses, not only with safety, but with the most decided advantage, as a remedy for acute inflammation, frequently, however, premising free blood-letting. His practice was to administer from a half to a whole ounce, and wait the result for twenty-four hours, when, if he did not find the pulse subdued or rendered irregular, he repeated the dose. This, he says, rarely failed to reduce the pulse to the degree wished for, and the disease seldom failed to give way, provided it had not gone the length of producing disorganization of the part. He had administered so much as two drachms to a child nine months old. Vomiting sometimes followed these large doses, but never any dangerous symptom. Dr Clutterbuck mentions that he himself had ventured to give half an ounce dose, but never to repeat it a second time.

The author does not notice the efficacy recently ascribed to lemon-juice as an antidote for an overdose of hyoscyamus.

He merely mentions that a case of poisoning by henbane requires the same treatment as that by opium.

A very full account of nux-vomica and strychnine is given. The author inclines to the belief that this medicine acts on the muscular system through the spinal chord alone ; as he found that division of the cord did not prevent poisoning by nux-vomica ; whereas destroying the cord caused complete cessation of the tetanic symptoms ; or, if only a portion be destroyed, the parts supplied with nerves from this portion of the cord ceased to be affected with convulsions. He also thinks it probable that, as the motor nerves are then chiefly affected, its action is chiefly excited on the anterior columns. The opinion, that the cerebellum is excited by it, he thinks rests on rather hypothetical grounds, though MM. Olivier, Orfila, and Drogartz have observed in the cerebellum more evidence of lesion than in the other parts of the nervous system after poisoning by this drug. The sexual appetite also, which is regarded as being under the influence of the cerebellum, is generally admitted to be excited by nux-vomica. The indications for the use of this valuable medicine are detailed with great minuteness.

It is difficult to see on what principle Conia deserves a trial as an antidote in poisoning by strychnia. Though the one poison may produce symptoms which are the counterpart of the other, yet, that is no argument for the one possessing antidotal powers with regard to the other. Both are violent poisons, and even were it proved that they were antidotes of each other, no one would be justified in employing a means which of itself would almost surely prove fatal. Mr Pereira applied conia to a wound in a rabbit affected with tetanus from the use of strychnia ; the convulsions indeed ceased, but, as might have been expected, the animal died.

A lengthened description is given of the Cinchonas, which are divided by the author into two great classes, true and false cinchonas. The true cinchona barks he divides into two sections ; 1st, those with a brown epidermis, including three varieties or species, the gray or pale, the yellow, and the red cinchonas ; and 2d, those with a whitish epidermis, including also three varieties, the gray or pale, the yellow, and the red.

To the pale or gray cinchonas of the first section belong the crown bark, the product of the *Cinchona Condaminea* ; the gray or silver bark, that of the *C. micrantha* ; the ash bark, that of the *C. ovata* ; and rusty bark, the product of the *C. purpurea*. The royal yellow bark, from an unascertained species, is the only bark classed under the yellow cinchonas of the first section. The red cinchona also, from an unascertained species, is classed under

the red Cinchonas of the first section, and is the only bark belonging to that variety.

Only one species is classed under the head Pale Cinchonas of the second section, viz. those with a whitish epidermis, the white Loxa bark. Under the yellow Cinchonas of this section are classed the hard Carthagena bark, from the *C. cordifolia*; the fibrous Carthagena bark, probably from the same species; the Cusco Cinchona, from an unascertained species, and the orange Cinchona of Santa Fé, from the *Cinchona lancifolia*. Under the red Cinchona barks of this section are arranged the red Cinchona of Santa Fé, the produce of the *Cinchona magnifolia*, and the red Cinchona with micaceous epidermis of Guibourt.

The false Cinchona barks, only one of which occurs in English commerce, viz. the Pitaya bark, are five in number, viz. the St Lucia bark, the Caribæan bark, the false Peruvian Cinchona bark, the Brazilian Cinchona, and the Pitaya bark.

We do not much approve of the denomination of False Cinchona; a term which indeed originated in confusion and perpetuates error. It seems rather absurd to speak of False Cinchona, since the use of the term implies that the barks so designated do not belong to that genus. It is preferable to designate the barks so meant by their correct name of *Exostemma*, to which all those now mentioned are known to belong, and by the allied term of *Cosmibuena*, when they are referable to that head.

Regarding the alkaloids of the barks, Mr Pereira justly remarks, that he cannot subscribe to the opinion, that they possess all the medicinal properties of the barks themselves, seeing they are deficient in aromatic qualities, and possess no astringent properties. It is to this circumstance that he attributes the fact, that disulphate of quinine will sometimes irritate the stomach, and give rise to nausea and pain, whilst the infusion of bark will be retained without the least uneasiness.

The process of the Edinburgh College for the preparation of the disulphate of quinia is highly commended, combining as it does both simplicity and economy.

Under the heads of *Areca Catechu*, *Uncaria*, *Gambir*, and *Acacia Catechu*, are given the most satisfactory and full accounts of the numerous varieties of catechu yet published. The species of *Cassia* yielding senna are well characterized, and beautiful representations of the leaves are given, as well as of those which are used in the adulteration of that drug.

With regard to Quassia, Mr Pereira thinks that it probably possesses somewhat deleterious properties; and though he is not inclined to place much confidence in the reports of Kurtz, Barbier, and Kraus, as to the poisonous properties of quassia, es-

pecially as to its action on the nervous system, he thinks that a cautious practitioner would avoid employing it in amaurosis and cerebral affections. We have frequently witnessed unpleasant effects caused by the administration of the infusion of quassia. The chief symptoms produced were, sickness, prostration of strength, and general tremors; and one individual was so easily affected by this medicine, that he could detect its presence in any bitter infusion, in however small quantity it might be, from its effects on his system.

A most valuable and comprehensive article is given on opium. Eight varieties occurring in commerce are described, with the external and chemical peculiarities of each. The ingredients found in opium are minutely described, with their modes of preparation and their tests. In mentioning the various processes which have been suggested for the ascertaining the proportion of morphia, he takes occasion to condemn that recommended by the Edinburgh Pharmacopœia, as the morphia is soluble in a solution of carbonate of soda. There must be some misunderstanding, however, as to this mode of conducting the experiment, since, if the precipitation be conducted in the cold, as directed, the whole morphia is precipitated. If heat be applied, however, to favour the precipitation, as seems to have been done by Mr Pereira, a considerable quantity of the precipitate is redissolved. We have frequently repeated the process, and found it to answer sufficiently. It has, besides, the great advantage over others of being easily applied, the ingredients required being always at hand. But the author prefers a modification of M. Thiboumary's process, though complicated, as the best means for determining the goodness of opium by ascertaining the quantity of morphia.

In mentioning the various forms in which cantharides are employed as a vesicant, we wish that Mr Pereira had noticed one preparation which is much lauded by the French, and which, within the last two years, has been pretty generally introduced into practice in London and Edinburgh. The preparation alluded to is the ethereal extract of cantharides, spread over gummed cambric-paper. It possesses some advantages over the cantharides blister in common use. It is less apt to affect the urinary organs, though it does not act more speedily, and not always so surely; it is more cleanly, and may be carried fit for use in a common pocket-book. That prepared in London is spoiled by the addition of some balsamic tincture, to stain the paper of a yellow colour, and render its odour more pharmaceutical. Messrs Smith in Edinburgh prepare it in the same form as that originally used in Paris.