less numerous, than they must have been, when cities were small and thinly inhabited. In South America at present the herds of cattle are so large and numerous, that the animals are slaughtered for their hide and tallow, the muscular parts being left to beasts and birds of prey. In Australia, also, the sheep used to be kept for the fleece alone; but this is found to be less profitable in certain years than to slaughter them for their tallow, by which large profits are often realized. We have been informed that not very long ago one gentleman realized in a very short time L.3000 from the sale of tallow obtained from sheep sacrificed in this manner.

Thus it appears, that on the habitable globe there are, in the relative proportion of animals and human inhabitants, at least two opposite extremes, which to a certain extent render the reasonings of Mr Smith and all similar speculators inapplicable and unavailing. In certain countries with thin and scanty population, cattle are so numerous and multiply with so much rapidity, that not only are their carcases more than enough to be used for food, but often the animals are deprived of life in great numbers, in order to apply their hides and tallow to the uses and necessities of the human race. In another class of countries, again, in which the human race has been for many ages established, and where population is consequently dense, the number of sheep and oxen is so small compared with the population, that the bodies of these animals acquire a much higher value, and they are not sufficient to supply with food, when used in this way, above one-fourth or one-fifth of the population.

What, then, becomes of the argument either in favour of or against the use of animal food or vegetable food exclusively as the ordinary diet of the human race? It is clear that in a large part of the habitable globe it is impossible to provide animal food for the inhabitants; and on this ground alone it might be prudent and proper to inculcate the use of vegetable food. We fear, nevertheless, that all appeals of this kind will be useless with those who have it in their power to obtain that species of food; and that necessity alone, either the impossibility of obtaining it, or the conviction that its use is hurtful, will be adequate to wean the human race from this long continued habit.

ART. V.—*An Inquiry into the Physiological and Medicinal Properties of the Aconitum Napellus; to which are added observations on several other species of Aconitum.* By ALEXANDER FLEMING, M. D., President of the Royal Medical Society of Edinburgh. 8vo. London, 1845. Pp. 160.

THIS treatise on the *Aconitum napellus*, or monkshood, ob-

tained for the author a gold medal from the Senatus Acedamicus of Edinburgh in 1844, and as it makes known the physiological and therapeutic action of that active but hitherto somewhat neglected plant, we shall very shortly glance at its contents.

The inquiry is divided into six sections. 1. History, botany, &c. of monkshood. 2. Physiological action on animals and vegetables. 3. Physiological action on man. 4. Therapeutic action. 5. Mode of administration. 6. Physiological action of other species of aconite.

In the first section, after pointing out the botanical characters of the monkshood, and showing that the *Aconitum napellus* is the only species which possesses active properties, Dr Fleming proceeds to state that the tubers are the most active part of the plant, and most so immediately after the period of flowering, when also they are largest. The leaves are the next most active part of the plant, but they lose their activity the moment the seed begins to form. The flowers follow the leaves in activity; while the fruit and stems contain the least of the peculiar active principle.

Aconite produced in animals weakness and staggering of the limbs, increasing to perfect paralysis, impairment of the sensations, slow and laboured breathing, blindness, spasmodic twitchings, and death by asphyxia. After death the heart was found beating with considerable strength, and the peristaltic movements of the intestines also continued for some time. The muscles were found less irritable than usual, but became rigid as they were wont to do after death. General nervous congestion was remarked extending to the brain, *venæ cavæ*, right side of the heart, &c., but the blood coagulated on being allowed to stand.

From all his experiments on animals the author concludes that the most characteristic symptom of the action of the poison of aconite was the production of muscular paralysis. He could not satisfy himself that it produced an irritant action in any case. On vegetables aconite seemed to act as a direct sedative poison.

Aconite when applied externally to man acted as a direct sedative to the nerves of sensation. When the root was chewed it produced a sensation of heat and tingling in the lips, tongue, and fauces, with sense of constriction in the throat; and when the alkaloid or tincture was applied to the skin it caused the same tingling and hot sensation with a sense of tightness and dragging. The common sensibility of the part to which it was applied was impaired, as well as the special sensations, so that little pain was experienced in the part when pinched, the senses of taste and smell were blunted, and if applied to one temple the sight of the corresponding eye was more or less completely lost.

In enumerating the physiological action of aconite on man the author considers it under four different degrees of operation, the

first two of which include the utmost extent to which it is safe to carry it. One dose of five minims of the tincture produced after a while a feeling of warmth, nausea, and oppression of the breathing, attended with numbness, tingling, and sense of distension in the lips and tongue, slight muscular weakness, diminished strength, and firmness of pulse, and slow respiration. A second dose of five minims in a couple of hours, or a single dose of ten minims, caused more intense sensation of tingling, which extended over the arms, fingers, &c., while the sensibility became more impaired, the pulse fell lower in strength and frequency, and the respirations diminished still further in numbers. Great muscular debility was experienced; giddiness and confusion of sight came on whenever the erect posture was assumed. The person sank into a lethargic state, and complained much of chilliness, particularly in the extremities, which were cold to the touch. These phenomena continued in full intensity from three to five hours, when they gradually disappeared.

To this extent alone was it safe to administer the aconite. But the author has composed his treatise in such a manner as to lead to the belief, that he has been several times allowed to carry the administration of the drug to an almost fatal extent, or has seen it carried to the extreme verge of safety in the Royal Infirmary of Edinburgh. If this be really the case, it is not easy to say whether we are more to be surprised at the want of principle, and rashness evinced in devising and performing such experiments, or the want of judgment in giving them publicity. The publication of such statements induced the managers of that institution to make a full investigation of the subject, when we are informed, they found that aconite had never been given so as to produce fatal results, and that only once poisonous symptoms were accidentally developed. We suppose, therefore, that the author has used a poetic licence not very becoming in a scientific treatise, when he describes, as witnessed by himself, the symptoms attending a poisonous and extreme dose, and talks of having seen patients recover from the former of these states. In fact, the knowledge of the result of this inquiry by the managers of the Royal Infirmary of Edinburgh throws doubts over the whole of the statements in the treatise, and is apt to induce the belief that the author describes, as seen by himself, what he never saw, and what never occurred. After such an explanation the profession will be able to judge what amount of credit ought to be attached to the following statement.

“On the administration of a fourth dose of five minims two hours after the third, the symptoms assume a more alarming character. The countenance becomes pale and sunken; froth issues from the mouth, and the prostration increases. Some thus affect-

ed have stated that they felt as if dying from excessive loss of blood. Consciousness usually remains; or there may be slight wandering delirium, as occurs also after profuse hæmorrhage. The voice is whispering or is altogether lost. The pulse becomes still smaller, weaker, and more irregular, and the breathing more imperfect. The surface is colder than before, and is covered with a clammy sweat.

“I have seen patients recover from this state under the administration of proper remedies.”—P. 25.

The following description, we must accordingly infer, has been generalized from accounts of fatal terminations given by different authors.

“When the action of the drug is carried to a fatal extent the individual becomes entirely blind, deaf, and speechless. He either retains his consciousness to the last, or is affected with slight delirium; the pupils are dilated; general muscular tremors, or even slight convulsions supervene; the pulse becomes imperceptible both at the wrist and heart, the temperature of the surface sinks still lower than before; and at length, after a few hurried gasps, death by syncope takes place.”—P. 25.

We were informed that the physicians of that institution, when examined before the managers, stated that no aconite was given to any patient, so far as they knew, except when ordered by themselves. Dr Fleming, however, appears by his own testimony to have, by some means or other, experimented on patients in that institution in a very reckless manner.

Thus, in endeavouring to ascertain the physiological action of the other species of aconite, the author ventured to administer at once doses which could not fail to have proved fatal, had the species from which the tincture was prepared possessed any activity; and it is to be recollected that until these experiments were made, he had no certain means of knowing whether the species possessed activity or not. Thus tinctures of all the different species were made of the strength of one drachm of the dried root to one ounce and a half of rectified spirit. Fifteen or twenty minims of the tincture of *Aconitum napellus* were found to be a full dose, producing marked physiological effects; yet he ventured to exhibit half an ounce of the tincture of the *A. anthora* to a man, and a whole ounce to the same individual on another occasion! Of the tincture of the *A. lycoctonum* he gave half an ounce to a female; and the same quantity of the tincture of the *A. barbatum*. In this section of the genus, however, one species appears to have been met with possessing greater activity; for we find that ten minims of the tincture of the *A. ochroleucum* to one female, and thirty to another produced a sense of burning heat in the face, hands, and feet, general warmth, and diaphoresis. Had the author told

us all the truth here, we should probably find that he ventured to give as large doses of this species as of others in the same division, and we should like to know the results. Of the remaining species in the same section he gave at one dose half an ounce of the tincture. What, then, induced him to limit his dose of that of the *A. ochroleucum* to thirty minims. With regard to the other species he never says he began with small doses and gradually increased them. What then led him to suspect the existence of greater activity in this species, and not at once give the same dose which such a reckless experimenter gave of all the allied species? The tincture of the officinal species of aconite of the London and Dublin Pharmacopœias he administered "even to the extent of half an ounce" without noticing any effects.

The author next considers the several actions of aconite on the cerebro-spinal, muscular, vascular, respiratory, and secerning systems, and on the alimentary canal. From these he concludes, that aconite is a calmative anodyne and antispasmodic, which would prove useful in convulsive and spasmodic diseases; that it is an advisable antiphlogistic in apoplexy, pleuritis, or any disease in which the circulation of the brain is excited, or where there is inordinate activity of the general circulation, as in pneumonia, pleuritis, &c.; that it is contraindicated wherever there exists anæmic states of the system, weakness of the circulation, any impediment to the free flow of blood through the heart or lungs, any difficulty of breathing, and also in advanced stages of bronchitis; and that it does not appear to be a cumulative drug, nor yet an irritant.

The inference that aconite is not a cumulative agent we altogether deny. Its cumulative effects we have several times witnessed; and we think it is there that its powers require to be most sedulously and vigilantly watched. But, if no other evidence of this fact were at hand, the fatal issue of its exhibition in the case of Dr Male of Birmingham were sufficient to show that the drug is cumulative.

In treating of the therapeutic effects of monkshood, the author advances little which was not previously known. He, however, confirms its beneficial action in many of those diseases in which it was employed, and recommended by Drs Curtis, Duncan, Copland, Turnbull, Roots, Sigmond, Thompson, MM. Störck, Hufeland, Busse, Delens, Jobert, Vogel, Lombard, &c. Thus in many varieties of neuralgia, as tic-douloureux, hemicrania, sciatica, as well as in nervous and rheumatic headach, he found it frequently effect a cure. In the successful cases of neuralgia the treatment averaged six days. Four out of six cases of gastralgia were cured by its means. From its action in diminishing the action of the heart, its employment is recommended in certain diseases of

that organ, and in aneurism of the large vessels. Aconite has been very largely employed in rheumatism since first recommended by Störck ; indeed Lombard and Sigmond regard it as a specific. In the acute cases which came under the author's notice, the duration of the treatment was between five and six days, and out of fifteen cases cardiac affections were observed in only two. This plan of treatment, therefore, seems to be as successful as any yet adopted, and to have less tendency than any other to produce extension to the heart. In chronic rheumatism it is recommended to employ it externally, but should this fail it may also be given internally. The internal administration is more especially indicated where there is any redness or swelling of the part. It seemed to have less effect when there was affection of the smaller joints. In lumbago, erysipelas, carcinoma, pruritus, hysteria, and spasmodic asthma, monkshood has also afforded occasional relief.

Exhaustion by alcohol is the best mode of obtaining the active principles of the drug. Water dissolves but very little of the activity, and the application of much heat to the expressed juice, in forming the extract, destroys much of the aconitina. The author recommends the tincture to be prepared by macerating 16 ounces of the dried and powdered root of aconite in 16 ounces of rectified spirit four days, then to pack into a percolator, and add rectified spirit till 24 ounces were obtained. In this manner is prepared the tincture to which the author refers in his experiments. From this tincture the extract is procured by carefully distilling the spirit, till the residue attains the proper consistence. The dose is from one-sixth to one-third of a grain, thrice daily. The tincture, however, is preferable for internal administration, as being more uniform in strength, and should be given in doses varying from two to five minims, repeating it if necessary in four hours, or giving it in half doses after the same interval if it is merely required to keep up the action of the drug. Sickness may be prevented by conjoining an effervescent draught with the dose of aconite.

It seems to us that the above described tincture is too strong for general use. Almost all the active tinctures of the pharmacopœia are ordered to be prepared of the strength of one drachm of the drug to one ounce of fluid, and this active drug ought to form no exception to the general rule. A tincture of this strength is much more manageable than the one recommended by Dr Fleming, where an additional drop may prove an over-dose ; whereas twenty drops of the tincture we recommend, which would be equal to five drops of the author, would form the medium dose, and no risk would be run of producing poisonous symptoms from a single additional drop being accidentally given.

For external application the author prefers the tincture, one or

two drachms of which may be rubbed over the affected part daily ; or an ointment may be made with aconitina of the strength of two to eight grains to the drachm of lard. The application of these to the abraded skin is dangerous.

In the sixth section Dr Fleming proceeds to point out by a reference to experiment, that, of the four sections into which the genus is divided by Decandolle, the only one which possesses poisonous properties is that of the napellus, of which the *Aconitum napellus*, monkshood, is the best known species ; and the *Aconitum ferox*, the Indian species, is supposed to be even more poisonous.

In an appendix is given a selection of experiments performed on man and the lower animals, for the purpose of ascertaining the active properties of the drug ; but for these we must refer to the work itself.

ART. VI.—*On Diseases of the Liver*. By GEORGE BUDD, M. D., F. R. S., Professor of Medicine in King's College, London, and Fellow of Caius College, Cambridge. London, 1845. 8vo. Pp. 401.

DR BUDD commences with an account of the minute structure of the liver, as ascertained by the researches of Mr Kiernan and Mr Bowman, and Muller and Henle. As we considered the distribution and arrangement of the vessels when we gave an account of the labours of the first of these authors, we shall notice only those points which have not been previously mentioned.

When a small portion of liver is examined by the microscope, it appears to be a mass of nucleated cells, flattened, irregular in shape, but mostly spheroidal ; the largest being about one-thousandth part of an inch in diameter. Each cell contains a *nucleus*, which again contains a *nucleolus*, indicated by a central pellucid spot. These cells contain oil-globules and amorphous granular matter. Their colour and transparency depend much on the colour and quantity of matter contained, which vary much in different cases. They are usually of a light-brown tint, and almost transparent ; but occasionally they are yellowish and opaque.

These nucleated cells are the immediate agents of secretion.

Similar nucleated cells exist in the mucous membrane of the gall-bladder and biliary ducts, though differing in form and appearance. But these cells have not been traced beyond the ducts ; and the mode in which the nucleated cells of the liver communicate with those of the mucous membrane of the ducts is consequently unknown.

These nucleated cells, it has been said, contain globules of oil