ART. II.—1. *Recherches Chimiques et Medicales, &c.—Chemical and Medical Inquiries into the Preparation, Properties, and use of Creosote.* By E. MIGUET, D. M. P. 8vo. Paris, 1834. Pp. 94.

2 *A Treatise on the Chemical, Medical, and Physiological Properties of Creosote, illustrated by experiments on the lower animals, with some considerations on the Embalment of the Egyptians, being the Harveian Prize Dissertation for* 1836. By JOHN ROSE CORMACK, Member of the Royal Medical and Royal Physical Societies of Edinburgh. 8vo. Edinburgh, 1836. Pp. vii. and 134.

IN the 41st, 42d, 43d, and 45th volumes of this Journal, notices will be found of the discovery, modes of preparation, and some of the effects of creosote. In the present article, we shall state briefly the substance of the dissertations of M. Miguet and Mr Cormack, in so far as they tend to throw light on the physiological and therapeutical effects of that substance.

"When creosote is taken into the mouth," says Mr Cormack, "it occasions violent pain, which extends to the pharynx. The pain of the tongue is extremely acute, but seldom continues more than a few minutes. The lips retain the feeling of pain much longer. For a considerable time after the pain excited in the mouth has subsided, a strong and disagreeable taste of smoke remains, and some individuals allege that they have continued to feel this for several days, after using it for toothach. Insects and fishes, when immersed in a solution of twelve drops of creosote in two ounces of water, die in about two minutes. After one or two waterings with creosote, water plants fade and die. M. Miguet watered a young and healthy rose bush, which had a number of buds and a newly expanded flower, for seven days, with a solution of creosote, and did not observe any change on its appearance, but on the eighth day it began to droop, or, as he expresses it, *son aspect etait triste.* He dropped some of the same solution on the rose, which was of a beautiful red colour, when it assumed a pale and then a yellow appearance; and he observed that the same changes were produced on the green leaves." When dropped in a concentrated state on the skin, a sensation is felt analogous to that produced by a slight burn, rubefaction takes place, and the *epidermis* cracks and falls off in small furfuraceous scales.

The effects of a fatal dose of creosote introduced into the stomach will best be shown by the following experiment of M. Miguet. Two drachms in half an ounce of water were administered to a young

dog. Complete prostration of the muscular system, vertigo, stupor, dulness of the senses, difficult respiration mechanically increased by a viscid mucus obstructing the superior opening of the larynx, and producing a violent convulsive jerking cough, were the immediate effects. The respiration next became short and interrupted, and the breath hot. These symptoms were accompanied by eructations, nausea, spasms of the abdominal muscles, and vomiting of a milky matter. After the animal had remained two hours in this painful situation, the symptoms began to be aggravated; respiration became more and more laborious, the interval between expiration and inspiration longer than usual, trembling and contractions of the extremities followed, and death ensued. The body was immediately examined. All the tissues, except the liver, exhaled a strong odour of creosote, and traces of inflammation appeared almost throughout the whole extent of the gastro-intestinal mucous membrane. The matter found in the stomach coagulated *albumen*, and when exposed to heat produced a thick smoke, having the well-marked odour of creosote. The cavities of the heart contained two or three clots of red transparent blood, and this fluid in the neighbouring vessels appeared to M. Miguet to be more firmly coagulated than usual. The greater part of the lungs was gorged with brownish red blood, of a greater specific gravity than that found in the remainder, which was of a rosy colour. No symptoms of congestion nor hemorrhage appeared in the brain.

The seventh experiment of Mr Cormack exhibits the effects of creosote introduced into the stomach, in a dose not sufficient to prove fatal.

"21st December, one P. M. Thirty drops of undiluted creosote were introduced into the back part of the mouth of a small young terrier dog, all of which was apparently swallowed. He immediately exhibited signs of uneasiness, and rubbed his head violently on the ground. In three minutes a quantity of saliva, white and considerably frothed, began to issue from the mouth, and continued to flow for some time. In two minutes more he fell down. In ten minutes after the poison was administered, the breathing became much laboured, slight spasmodic twitchings affected the whole body, especially the ears and extremities, and the heart's action appeared to be feeble and fluttering; but for some time, no very accurate stethoscopic observations could be made on account of the convulsed state of the animal. In a quarter of an hour more, and in twenty-five minutes after the poison had been administered, the movements of the heart could not be felt, nor could its sounds be heard; but on applying the ear to the chest a loud bronchial *soufflet* was detected, which continued to increase for some time, and then a rattling noise was heard in the throat. This lasted for a considerable time. Though the scalpel was pushed into the tongue, (which was hanging out,

stiff and cold,) legs, and other parts of the body, he gave no expression of pain. From a wound, which had penetrated one of the brachial veins, a considerable quantity of blood issued, and from this time, the dog showed evident signs of returning consciousness. the pupils became dilatable, which for a long time previously had not been the case; the eyes gradually regained their lustre, and in ten minutes after the blood had began to flow, he was observed to move his head slightly upwards. From this time, the convulsions, which had almost ceased, began to return, and rapidly became more frequent. Twenty minutes after the first signs of returning life had been observed, and in exactly an hour and two minutes from the time the creosote was swallowed, he made an unsuccessful attempt to rise, and in a few minutes afterwards, he crawled several feet. After this exertion, the breathing became again greatly laboured, and he lay for some time quite motionless. In an hour and twenty minutes from the commencement of the recovery, he was able to walk about the room, but was greatly disinclined to move. At five P. M. he refused to eat, and continued to exhibit the same disinclination to move. The breathing was almost natural. On the 22d—the following day—he ate hardly any thing, seemed very sick and dull, and could not be induced to leave the fire. During this day he had some vomiting. On the 23d, he ate and drank several times, but uniformly vomited afterwards, apparently all that he had taken. On the 24th, the vomiting continued pretty much the same as on the preceding day, but he was decidedly more lively. On the 25th and 26th, he vomited very little, and took a fair allowance of food. In a few days more, the bad symptoms had wholly disappeared, and he has ever since enjoyed the most perfect health."—Pp. 74–5–6.

As might be expected, creosote produces its deleterious effects much more rapidly when introduced into the circulation.

"The right jugular vein of an ordinary sized terrier bitch was opened about the middle of the neck. It was intended, that a drachm of pure creosote should have been introduced into the vein, and with this view, the pipette was charged with that quantity; but before two scruples had passed from the instrument, the respiration suddenly became hurried and sonorous, and the gentleman who was listening to the heart's action through the stethoscope, exclaimed '*the heart has stopped,*' and, of course, the further introduction of the substance was discontinued. For some seconds after this, the animal continued to breathe hurriedly, and before expiring uttered a faint shrill cry. When respiration had ceased, the thorax was laid open. In performing this operation, it was observed, that the muscles of voluntary motion contracted energetically when cut into. On exposing the heart, it was found to be perfectly quiescent, and its contractions could not be excited, either by pricking it with the scalpel, or making incisions into its substance. On the other hand, the œsophagus remained contractile for a considerable time; and on exposing the intestines, the vermicular motion was observed to be going on with great activity. The heart contained

a considerable quantity of dark-coloured blood in all its cavities, but more in the right than in the left side. Its muscular fibre appeared flaccid. All the large veins leading to the heart were filled with partially coagulated blood, and those of the abdomen were also considerably distended. The lungs were dark-coloured from the quantity of blood which they contained, and in the bronchial tubes there was a considerable quantity of a reddish-brown, frothy, serous-looking fluid."—Pp. 66, 67.

To complete the view it is necessary to state the effects of the substance when injected into the arteries, which will be best illustrated by the following experiment.

"January 5th, twelve noon. About fifty drops of pure creosote were injected into the carotid artery of a rather large-sized sheep-dog. Before making the incision in the artery, it was tied below the place where it was intended to be opened, and as soon as the fluid had been thrown in, it was secured by means of a ligature. No sooner was the operation over than the animal sprung on his feet, and made an almost successful attempt at escape from the room, the door of which was open. He was carefully observed for about an hour, but during all this time he exhibited not the slightest sign of any functional derangement. The edges of the wound were now brought together by means of stitches, and the animal allowed to remain at rest. He was repeatedly observed during the day, and appeared uniformly quite lively. About nine P. M. he was for the first time offered food, which he ate with great avidity. He had slight attacks of vomiting for two or three days, but this affection did not continue longer, and at the end of the fifth day, when he was killed, he was in good health. On dissection, the artery was found to be firmly plugged up with a coagulum of blood, above and below the ligature, but with this exception, there was nothing apparent which could be ascribed to the experiment."—Pp. 71, 72.

From these experiments, it would appear that the first deleterious action of creosote is upon the heart itself, which it seems almost instantaneously to paralyze. Coma also occurs, but appears to be the result of the diminution or destruction of the vital energy of the heart. The other appearances observed may all be accounted for by its local action. M. Miguet does not state positively his opinion regarding the manner in which life is destroyed by this substance, but suggests that it may be by inflammation, by coagulating the blood, or by a special action on the nervous system. Upon these hypotheses Mr Cormack makes the following remarks. "The notion that creosote proves fatal by coagulating the blood is obviously incorrect, for in no case did I observe any appearance in the blood immediately after death, similar to that produced by bringing creosote in contact with it, viz. numerous white specks caused by the coagulation of the albumen; and, of course, whatever influence inflammatory action might have in the cases related by Miguet, where the ani-

mals survived some hours, in those instances in which the dogs were almost instantaneously killed by injecting creosote in the veins, no such cause can be admitted."—Pp. 86, 87.

The results of Corneliani's experiments corroborate Mr Cormack's views. Excessive doses, whether swallowed or applied to a large nerve, produced immediate death without organic lesion. Smaller doses injected into the veins produced the same effect, and if taken internally gave rise to irritation of the mucous membrane, lining the stomach and intestines. Stupor follows its inhalation.

The action of creosote on the urinary organs is very uncertain. Sometimes it augments the quantity of the secretion, and at others diminishes its amount and specific gravity. Micturition nine times in one hour was produced by a minim administered three times a-day. Strangury and remarkable changes in the colour of the urine, such as its becoming black, are phenomena which occasionally follow its use, and, like turpentine and some other substances, it rapidly communicates its odour to the urine.

On comparing the effects of creosote with those of prussic acid, many points of resemblance will be observed. Such are their producing or putting an end to vomiting, according to the dose exhibited, the transiency of their effects when they do not prove fatal, their either stopping the action of the heart, or directly affecting the brain, according to the quantity and mode of administering the substance, the lungs after death being found of a dark colour and gorged with blood, &c. In poisoning with prussic acid, the irritability of the heart is in general quite exhausted; after a fatal dose of creosote it is always so. The state of the blood is the same after poisoning with creosote as it is after a fatal dose of prussic acid. In the former case, all the tissues exhale a strong odour of the substance, which lasts for weeks. M. Miguet asserts that the liver is an exception. Mr Cormack, however, found it impossible to ascertain whether or not it was exempt from the prevailing smell. In animals poisoned with prussic acid, the odour does not continue so long, and in some cases would appear not to be perceptible at any time. When it is present, all the tissues partake of it.

According to Corneliani, oil and mucilage, when combined with creosote, render it less powerful, while vinegar has a contrary effect. Mr Cormack does not deny that oil and mucilage may modify its power, but throws some doubt on that part of the statement, which refers to the increased activity communicated to the substance by vinegar. In three comparative experiments which he made to ascertain the point, "there was no apparent difference in the activity of creosote when given with acetic acid or alone." He candidly observes, however, that "from

the different strength of the animals, and from the small number of the experiments, they cannot be considered as showing more than that the addition of the acetic acid produces no very decided increase of activity. Considering that creosote coagulates albumen, it appears strange, that the addition of this substance causes it to act more forcibly than when given alone, or even with acetic acid. Yet the following experiments appear to demonstrate this to be the case.

" The two dogs, upon whom the observations were made were of an ordinary size, and seemed, from their striking similarity in every respect, to afford proper subjects for a comparative experiment. 12th January, twenty minutes before three o'clock, two drachms of pure creosote were injected by means of an œsophagus tube into the stomach; and almost immediately afterwards the white of two eggs. In six minutes after the creosote had been given, he became suddenly affected with vertigo, and fell over several times. In another minute, his breathing became laboured and sonorous, but this lasted only for two minutes, when the breathing was comparatively little affected, and could only be heard upon applying the ear to the chest, where a distinct, though not loud blowing sound was detected. For a short time, however, his breathing was so loud at intervals, as to be heard at a considerable distance. In eight minutes after the creosote was given, he was considerably affected with spasms, and in a minute and a half more fell over, and was never after able to rise. The convulsions soon became very violent, and continued so for twenty-five minutes—the animal during all this time being in a state of complete coma, from which he never recovered. It was remarked that the spasms were general over the whole body, but that the posterior extremities and the lower jaw were far most violently affected. Although the convulsions were most violent during the twenty-five minutes mentioned, yet they continued pretty strong for an hour more, when they became feeble, and occurred only at intervals. At half-past five, the body felt cold, and at first it was supposed that every mark of vitality had ceased to be apparent, but upon a close examination, slight twitchings of the lower jaw and posterior extremities were observed. In a few minutes, these also ceased to be perceptible. The cavity of the chest was then laid open, when the heart was found to be much gorged, and there was great serous congestion everywhere. The ventricles were quiescent, and refused to contract when irritated with the scalpel; but the auricles contracted at intervals spontaneously, and their vermicular motion was very evident."—Pp. 89, 90, 91.

Contrast this with the following experiment: " 12th January, three P. M. two drachms of creosote, mixed with two drachms of pretty strong acetic acid, were injected into the stomach of a dog, very similar to that upon which the preceding experiment was performed. *For seventeen minutes he did not exhibit the slightest sign of uneasiness,* but in another minute he appeared giddy, and short-

ly afterwards fell, but rose again immediately. He continued to rise and fall alternately for six minutes, after which time he rapidly became comatose and lay in this state, and was strongly convulsed. In this case, the lower jaw was not for a long time affected, and never was much so; the spasms of the posterior extremities and abdominal muscles were most apparent. About half-past four, the breathing for the first time became laboured and sonorous. At a quarter past six, the spasms being much abated, the chest was laid open. The heart was much gorged. The auricles were observed contracting distinctly, but from a tumultuous spasmodic state into which the body was thrown upon opening the chest, by which all the viscera were heaved to and fro, it could not be decided whether the ventricles were or were not contracting. The venæ cavæ, pulmonary veins, and aorta having been tied, the heart was cut out of the body, and it was seen that the auricles were contracting at intervals of three or four seconds with considerable force, but that the ventricles were quiescent. All the vessels formerly tied were now suddenly cut through, and in this way the heart was almost instantaneously drained of blood. This caused it to contract with extreme rapidity, and so forcibly, that at each impulse it seemed as if jumping from the plate on which it was placed."—Pp. 91, 92.

Creosote, like every new remedy, has been supposed by its admirers to be quite a panacea. It has been exhibited in the most opposite complaints, as a stimulant, a tonic, a sedative, and in almost all external diseases. It may not be amiss, then, to take a rapid view of the results of its exhibition in various affections.

1. *Pulmonary diseases.*—In these affections, it has been administered both locally and generally. Reichenbach employed it in hemoptoe, curing a phthisical patient who had been spitting blood for six days, by exhibiting daily five drops for four days. "In twenty-four hours after he began the use of the medicine, the spitting of blood was subdued, the pain ceased, respiration became more easy, and the fever disappeared. In another case of a similar nature, he accomplished as striking and as rapid a cure." Reichenbach, Martin Solon of the Hospital of Beaujon, and others, have employed creosote in the form of vapour, and apparently with success. Four cases are given by M. Miguet which appear to be decided enough, but we have doubts how far the creosote contributed to the result. The observations of Wolff and Elliotson show clearly, that, when taken into the stomach in such complaints, it is positively prejudicial. "Wolff found that its use diminishes the quantity of urine, producing at the same time a greater disposition to colliquative sweats, and thus tending to complicate the original disease with dropsy. In one of his cases, the use of the creosote was discontinued on account of the violent vomiting which it produced."

Dr Elliotson's trials with it internally in phthisis were perfectly

unsuccessful. In phthisical patients, whom he caused to inhale for four or five minutes, four or five times a day, the vapour arising from a mixture of creosote with mucilage and water, it produced no farther effect in general than occasionally an increased facility of respiration, and a diminution of the cough and expectoration. Some it always appeared to irritate, and especially in all those in whom inflammation existed in any degree. He believes it to be no remedy for tubercles; but in cases, in which only a small number of *vomicæ* existed in the lungs, without tendency to further formation of tubercles, it was found beneficial. In bronchorrhoea, "or that state of the bronchial mucous membrane which consists in a profuse secretion without inflammation," he found its inhalation of essential service. In asthma, also dependent upon morbid excitability of the bronchial membrane, it proved frequently useful. The result of Mr Cormack's trial of it on himself, in a pretty severe catarrh was, that it promoted expectoration. He thinks that it tended to remove the uneasiness which was before considerable.

2. *Epilepsy, Neuralgia*, &c.—From the variety of the causes of epilepsy, it was not to be expected that any one remedy could prove successful in all cases. In some, Dr Elliotson found creosote do positive harm, and even when beneficial, it only temporarily rendered the fits milder, and increased the intervals between them. In Neuralgia and other forms of nervous excitability, it was found to be beneficial, especially in Neuralgia which is not of an inflammatory nature. Palpitation depending upon morbid excitability of the heart was alleviated more by it than by other remedies.

3. *Diabetes.*—Three cases are given by Dr Elliotson in which creosote proved beneficial in this disease. Whether it will cure it, further experiments are required to show.

4. *Nausea, vomiting, Gastrodynia.*—It is in these cases that creosote appears to have been most useful when administered internally. "This application of creosote was accidentally discovered by Dr Elliotson, from observing that when given in cholera it arrested the vomiting, though the liquid stools, and the fatal termination of the disease were not averted. Dr Elliotson states, that he has never seen it fail in arresting vomiting when it proceeded merely from functional derangement. Dr Shortt, who has tried it in about a dozen cases of this kind, has found it equally successful, and it has proved as efficient in the hands of Dr A. T. Thomson of London, Mr Bodington of Edington, in Warwickshire, and several other gentlemen, who, I am aware, have used it in private practice, but who have not published the result of their experience."—Pp. 133–4. According to Mr Taylor, the cases in which vomiting has been checked by creosote in the practice of Dr Elliotson, are *colica pictonum*, spasmodic pain in lower part of abdomen, with great constipation and vomiting, colic with constipa-

tion and vomiting, hysteria, anasarca, ascites with supposed disease of several of the abdominal viscera, phthisis with diarrhœa, chronic bronchitis with incipient phthisis. Medicines also which produced vomiting were retained when combined with small doses of the substance. Two cases are given by Dr Bodington in which creosote proved successful in arresting vomiting. "In a severe case of vomiting, apparently from arsenic, Dr Elliotson states that he has known it succeed astonishingly, and in the limited number of cases of sea-sickness, in which he had an opportunity of trying it, the desired relief was obtained. He also prescribed it with equal benefit in a case of vomiting from pregnancy." Mr Cormack had an opportunity of trying it in a case of the last description. The effect was most extraordinary. "The patient was a woman, about forty years of age, in the family way for the thirteenth time, and who had during her three previous pregnancies been troubled with fits of vomiting, occurring generally at stated periods, two or three times a-day; and she stated, that on these three last occasions she had miscarried. Being informed of this case by a friend who had the charge of her, I requested permission to try creosote, to which he consented, stating at the same time, that he did not believe it would be of the least use. She was ordered three drops of creosote thrice a-day, diffused in water by means of mucilage. She took the first dose about an hour before her usual attack of vomiting was expected, and since that time she never vomited, and rapidly improved in health. During the first day on which she took the medicine, she had slight nausea, but that also was entirely cured in the course of a few days, by persevering in the creosote without increasing the dose."—Pp. 139.

"A patient under Dr Shortt's care in the Royal Infirmary afflicted with cancer of the stomach, derived relief from pain in ten minutes, after taking a dose of fifteen drops."

Mere gastrodynia, according to Dr Elliotson, is sometimes unrelieved by creosote, and more easily subdued by prussic acid. When gastrodynia or flatulence is united with other symptoms of derangement of the stomach, he found a combination of prussic acid and creosote to be beneficial. When either fails he advises their union.

5. *Toothach and caries of the teeth.* — Creosote has been used more in this affection than in any other. Different explanations may be given of its *modus operandi.* "1*st*, It may be by destroying the nerve. I have somewhere seen this explanation objected to upon the ground, that, were the nerve destroyed, the pain would never return. If wholly destroyed, it certainly never would; but it may be partially destroyed; for the pain often returns months after nitric acid has been applied, in which case it is more probable that the remedy acts as a caustic than by coagulating albumen. 2*dly*, The creosote may unite chemically with the

albumen of the fluids, which are always exuding from a carious tooth, and thus form a crust to protect the nervous pulp from the irritating action of the air; or 3*dly*, It may perhaps afford relief by stimulating the loaded vessels of the nerve, and causing them to contract and expel the blood with which they are surcharged. That it in any case arrests the diseased action of the tooth is extremely problematical. I have seen cases in which its application completely cured the pain, but where the caries went on rapidly. The best method of introducing creosote into the diseased tooth is with a fine camel's hair pencil. When this has been done, the cavity should be filled with cotton saturated with pure creosote, care being taken that there are no adhering drops by means of which the interior of the mouth might be rendered hot and painful, and in some individuals even blistered. It is of great importance previously to clean out thoroughly the cavity. * * * The most careful attention can hardly prevent a minute portion of the substance from finding its way into the mouth; but this generally produces no other unpleasant effect than a slight burning sensation for some minutes at the top of the tongue, and a hot feeling in the mouth, and frequently in the lips, caused by the copiously secreted saliva which overflows, being mixed with a minute quantity of creosote." —Pp. 99, 100, 101. The increased secretion of the saliva may prove beneficial. In several cases in which creosote was imprudently used, we have known the teeth become brittle as it were, and break with the slightest force.

6. *Caries, whitlow.*—The cases reported by M. Reichenbach of these affections are few and unsatisfactory. The facts of Fremanger's case are these,—" A patient with scrofulous caries of the first and second phalangeal bones of the under finger, complicated with a fistulous opening into the joint, who had for ten months been using without any advantage, preparations of iodine and mercury, was speedily cured by creosote. It was for the first ten days introduced pure into the fistula by means of cotton, and afterwards an injection of five drops to the ounce of water was thrown in, for which was afterwards substituted the following ointment: Cerate one ounce, oil of sweet almonds one ounce, creosote thirty minims."

7. *Gangrene.*—One case, and that a very unsatisfactory one, is given from Reichenbach by M. Miguet. The whole skin of the thigh and the subjacent structures became gangrenous in a mason at Daubrawitz, who had his limb fractured. No symptoms are given; it is merely stated that creosote cured the affected part, though the patient never left his bed, and died of the effects of the accident.

8. *Burns and scalds.*—Reichenbach, Berthelot, and Coupel, have used it in these cases. The two last state, " That it has a remarkable tendency to cause the sores to cicatrize from the circumference to the centre, and thus prevent those irregular contrac-

tions which in so many instances produce a permanent disfiguration. A crust, in the first instance, forms on the injured surface, which spontaneously separates in a few days. In this, as in most cases of the external application of creosote, suppuration is prevented from taking place, or if it has commenced, this diseased action is arrested. It appears, then, to be an exceedingly valuable application to burns, as it prevents the two most usual bad effects of such injuries, viz. extensive suppuration and contraction of the cicatrices. Berthelot makes use of what he calls *l'eau de creosote*, which is a solution of three or four drops of creosote in an ounce of water." Reichenbach uses two parts of creosote to about a hundred of water.

9. *Cutaneous diseases, excoriations, chilblains, &c.* — In cutaneous diseases, Dr Elliotson found creosote useful when exhibited either internally or externally. In a case of *acne rosacea* of seven years standing, a cure was accomplished in seven months. In another of *acne indurata*, which had lasted for several years, a perseverance for six months in the use of creosote accomplished all but a cure. " Dr Copland has found a saturated solution in water answers well as a lotion in *porrigo favosa*, but most of those who have employed creosote in skin diseases seem to have ordered it in a much more diluted form. On the continent, creosote has been extensively used as an external application, in *scabies*, ringworm, *impetigo*, &c. by Reichenbach, Berthelot, and others. Professor Wolff of Berlin cured in eight weeks a case of *impetigo sparsa* of twenty-five years standing, with fomentations of creosote water. It is a very valuable application to chilblains, and may be used either in the form of lotion or ointment. Dr Hahn of Stuttgart says, that whether they be ulcerated or not, he accomplishes a cure in the course of a few days, by means of fomentations of water and creosote." Mr Cormack has seen it tried in four cases with decided success. The mixture applied consisted of equal parts of almond oil and creosote. The affected part was at the same time well rubbed with a smooth cork. Creosote in the hands of Reichenbach, Hoering, and Fichtbauer, has proved successful in mammary and infantile excoriations, as well as chops from cold.

10. *Cancer and lupus.*—Of the employment of creosote in these diseases, Mr Cormack gives the following account. " Reichenbach, Graefe of Berlin, Cloquet, and others to be noticed, state that they have employed it with great advantage. Graefe in his surgery gives a case of very extensive cancer of the face and palate which was much improved by creosote; and M. Breschet announced to the Academy of Medicine in Paris, during last year, that he had employed this remedy in a case of cancerous ulceration of the nose, in the Hotel Dieu, with great benefit. M. Tealier applied a saturated solution of creosote in water to an open cancer situated in the breast of a woman, who was suffering most excruciating pain from it, and it was with a view of alleviating this that

he employed the creosote. The result is interesting. No sooner had the solution come in contact with the ulcerated surfaces, than the patient complained of an acute burning pain in the sore, shooting through the right side of the chest, and extending from the head to the very tips of the toes. This continued for an hour, after which the pain entirely ceased, and the patient enjoyed uninterrupted sleep for ten hours. Subsequent applications uniformly allayed the pain, and under its use the sore assumed a more satisfactory appearance. The same gentleman has used it in various affections of the neck of the uterus. In one case he applied a mixture of one part of creosote to three of water to an ulcer in that situation. The pain which was immediately produced was of such a nature as to cause the woman to toss about in bed like one in convulsions. To alleviate her sufferings, he ordered injections of cold water, but the pain did not wholly leave her till the second day, when she was quite free of it, which had not been the case for two months before. The creosote was continued, but was afterwards used in a less concentrated form, and the patient was doing well, when he reported the case to the *Societé de Medecine* of Paris. These cases are interesting from the remarkable effects immediately produced, but are of little importance in enabling us to decide upon the value of creosote as a remedy in cancer, from their imperfect state. M. Marchal has published a case of cancer of the lip, in which he believes he accomplished a permanent cure by means of creosote. The ulcer had all the external appearance of cancer, and was attended with the lancinating pains so characteristic of that malady. Besides applying to its surface lint soaked in pure creosote, he occasionally touched it with caustic; and under this treatment the sore cicatrized, and the lancinating pains ceased. M. Marchal suggests the probability of the caustic inducing the ulcer more readily to take on a healing action under the use of the creosote, but ascribes to the latter the chief merit of the cure. He states that the application of the pure creosote occasioned at first very acute pain, and this is the most common occurrence, though it is by no means uniformly to be looked for. In consequence of reading the above case of M. Marchal, I was induced to try the effects of the application of pure creosote in lupus of the nose. The size of the affected part was rather less than half a sixpence, and had been very slowly increasing for about three years. Upon applying creosote to this surface, the patient experienced no uneasiness. For about a week it was dressed with lotions of creosote water, and from time to time touched with undiluted creosote. For a day or two no change seemed to take place; but after this, the parts surrounding the sore became inflamed, and at the end of the week the ulcer was decidedly larger than previous to the application of the creosote, and in consequence of the obvious injury done by the treatment it was abandoned."

"Professor Wolff of Berlin tried the effects of injections of creosote water into the vagina, in two cases of cancer of the *uterus*. In both instances, violent pain ensued, and one of the patients was ob-

liged, on this account, after nine days, to refrain from employing it, and the other, after persevering in its use for twenty-six days, was compelled from a like cause to desist. In neither case was there any diminution of the secretion or of the metrorrhagia. One of the patients expired after violent metrorrhagi, but the other died more slowly.

" During last summer I saw it tried in the clinical wards of the Surgical Hospital by Professor Syme, in a dreadful case of lupus. The fœtor of the disharge, which was before very great, seemed to be corrected, but besides this, there was apparently no good effect produced. The case, however, was so very bad, that no application could be expected to benefit it,—the articulation of the lower jaw being exposed on one side, and an immense surface involved in the disease."—Pp. 113–17.

11. *Chronic glanders.*—A cure has been accomplished by Dr Elliotson in two cases of this disease, by injecting a solution of creosote, of the strength of one drop to the ounce, into the affected nostril. The internal use of it does not appear to hasten the cure or render it more complete.

12. *Power of counteracting the fœtor of discharges.*—This has been observed in all cases, and in this way its use is beneficial, even when the disease is not eradicated. Dr Elliotson has found advantage from impregnating clysters with it; and he and others recommend it in mercurial fœtor.

13. *Gonorrhœa.*—Drs Elliotson and Hahn have tried it in this disease both in men and women. It was of no service, and in some cases positively prejudicial.

14. *Hemorrhage.*—The styptic power of creosote seems to be generally admitted. In the experiments of Dr Hoering of Neustadt on animals, the hemorrhage from large arteries and veins was arrested in a few minutes by the application of a dossil of lint, soaked in a solution of two drops of pure creosote in a hundred of water." Profuse bleeding from a leech bite in a child was immediately arrested by the same means, by Dr Bichthauer, after other measures had proved ineffectual, and the patient was rapidly sinking. In the forty-third volume of this Journal we mentioned an experiment performed at Munich, in which the carotid artery of a dog was divided and the bleeding said to have been stopped by the application of creosote and pressure with the finger. On that occasion we hinted our incredulity. Mr Cormack, however, does not think the fact so incredible, in consequence of the following circumstance which occurred to him. " When experimenting," he observes, " upon the poisonous effects of creosote, I had occasion to inject a quantity of pure creosote into the carotid artery of a dog. The effects produced on the animal passed away in about twenty minutes, and he revived from a state of great stupefaction, and crawled

about; but to my astonishment no blood had all this time issued from the wound, not even previous to the developement of the poisonous consequences of the experiment."—Pp. 105–6.

Dr Hauff of Besigheim found injections of creosote water useful in diminishing menorrhagia. He seems to have tried it only in one case, but in that it was eminently successful after all other means had failed.

15. *Ulcers, chancres, &c.*—In scrofulous, aphthous, phagedenic, and venereal ulcers, creosote, either in solution, undiluted, or in the form of ointment, is stated to have been eminently successful. In the various continental journals numerous cases are given, and in this city it has proved successful in the hands of Dr Shortt and Dr Cumming. For the particulars of some interesting cases we must refer to Mr Cormack's work, and content ourselves with quoting his directions for applying the substance to the sores. "It is important to remember that water only dissolves one-eightieth part of creosote. If a small excess of creosote be present it will not fall to the bottom, but will float on the surface, in the form of minute globules; and when the lint to be applied to the surface is dipped in the lotion so formed, these globules adhere; and in this way a very different wash is placed on the sore from what was intended. It is sometimes proper to apply pure creosote to ulcers, but in most instances the aqueous solution of various strengths will be found to answer better; and in very few cases, where the raw surface is extensive, ought pure creosote to be used, as too severe irritation is generally the result.****When creosote is used pure, it rarely requires to be applied more than once; but if the application be repeated, it should be with caution and at intervals, lest inflammation be unexpectedly produced. More or less inflammation always follows the application of pure creosote to a raw surface, and it continues according to circumstances, from a few hours to several days. At the beginning of the treatment, creosote, either pure or in the form of lotion, should be more copiously applied than afterwards; and as soon as a healthy granulating surface appears, it may with advantage be altogether discontinued, and some of the common lotions of the metallic salts substituted.****Creosote may be applied to ulcers under various forms. **Probably, in general, the best method is to spread the lotion gently over the surface of the sore, by means of a camel's hair pencil. It may also be used in the form of ointment, and if the ulcer is irritable, this may be spread on the surface of a poultice."

In Dr Gully's improved edition of Magendie's Formulary of new medicines, the following formula for a wash is given; creosote half a drachm, gum-arabic one ounce and a half, camphor mixture ten ounces and a half; mix. Dr Shortt's lotion is as follows: creosote ten drops, vinegar two drachms, water two ounces; mix.

"To chancres creosote should be applied with a camel's hair pencil. One or two applications are frequently sufficient, and more

may do harm. M. Berthelot relates a case in which a large chancre on the *glans penis*, after resisting treatment with the nitrate of silver, rapidly healed when it was dressed with lint soaked in a solution of creosote in water."

16. *Tumours, excrescences, &c.*—M. Martin Solon applied creosote successfully to a venereal bubo, which had resisted leeches, poultices and iodine. "Dr Heyfelder has removed excrescences from the anus in a fortnight, by means of creosote, after the failure of other remedies." Hahn and Fricke have found it highly beneficial in various kinds of condylomata.

17. *Diseases of the eye.*—Creosote has been tried in various diseases of this organ, sometimes without effect, occasionally prejudicially, never advantageously.

We have now laid before our readers all the information on the subject of creosote which can be looked upon as at all authentic. Of the seventeen classes of affections in which it has been tried, it will be observed that only in five can it be said to be more powerful than other remedies, and that in several it is positively prejudicial. The class of cases in which it seems to have acted most beneficially and powerfully are the 4th, 5th, 11th, 14th, and 16th. Respecting the effects of creosote in the 9th and 15th classes of cases, we must repeat what was observed on a former occasion, that "it possesses even in the healing of sores a faculty of cicatrizing their surface, without healing perfectly the subjacent parts. We must further take the liberty of adding, that, though it possesses very considerable physiological powers, one evident result from the experiments already made is, that its therapeutic effects are exceedingly limited. We must also say, that the random and indiscriminate manner in which it has been hitherto administered in diseases of the most opposite characters, though serviceable in showing its effects on the economy, is not well calculated to render it useful as an agent in medical therapeutics.

It is now necessary to say something of the works, the titles of which are prefixed. M. Miguet's work is the least interesting of the two, though at the time of its publication it contained a complete view of all that had been ascertained on the subject.

Mr Cormack's work is creditable both to his talents, his industry, and his information. If we have any fault to find, it would be with the style and arrangement, which a little care would have corrected. We have not alluded to that part of his work which contains his ingenious speculations regarding mummification, because these are foreign to the objects of this Journal. They will, however, we doubt not, be perused with pleasure by all who take any interest in such inquiries.

The book contains all that has been ascertained regarding the physical, chemical, physiological, and therapeutical properties of creosote.