

22d.—Has been quiet since the 15th, and is once more discharged to the shop. Is returned to the hospital in the afternoon in a fit. Was seen to sway to and fro on his seat, and rub his head, until he fell, and began to struggle with those who went to him. Had secreted a *fork* in his sleeve. Was put on the floor of an empty room, in the hospital, and watched. Rolled about, and pounded the floor with his head for an hour, when he became quiet.

29th.—Has been gradually recovering his strength and spirits since the 22d, and today is under moderate maniacal excitement. Jokes and cuts capers, and is anxious to go to work.

30th.—Spirits drooping. Has broken his bedstead, and sharpened two pieces of scrap-iron into knives. Has also secreted some pounded glass.

Nov. 15th.—Again excited. Says he is a "desperate fellow," and wants to kill somebody.

16th.—Spirits drooping.

Dec. 15th.—Seized with another attack of spasms, which recur every few minutes. Complains of sharp pain at upper angle of right scapula, and tears at it with his nails. One thumb flexed and one extended. Bends head back, and rolls over on to left shoulder, with his arms stiffly extended. Is conscious, and can talk. Rubbing shoulder at seat of aura gives relief. Ice increases the pain, while hot water is agreeable, and seems to diminish the violence of the spasms. Pulse irregular, as formerly. Ordered bromide of potassium, thirty grains three times a day, and a salt enema. Relieved of tendency to spasm in about six hours.

Jan. 23d.—Has had no recurrence of spasms, but is subject to great variation of spirits. Mind active and ideas fanciful, but without delusion. Pretends, in a playful manner, at one time, that he is Ajax, at another Achilles, and once that he was a "duchess in disguise," but without for a moment forgetting his identity. Complains of obscure pains about his heart, which omits the second sound at every fourth beat. The spasmodic symptoms will undoubtedly be controlled for some time to come by the bromide.

The interesting points in this case are: the similarly excitable condition of the cerebral and spinal centres, amounting, in both cases, to spasm, and producing epilepsy on the one hand and homicidal impulse on the other; and, secondly, the absence of delusion. As a case of epilepsy, it is peculiar in the retention of consciousness during the

attacks, the location of the aura, and the irregularity of the heart's action.

EXPERIMENTS AND OBSERVATIONS ON ABSINTH AND ABSINTHISM.

By R. AMORY, M.D.

ABSINTH belongs to the same family as the Chamomile, is ranked in the genus *Artemisia*, and bears the specific name *Absinthium*, wormwood. Its characters are well described in the standard botanical works, and to these I refer my readers. It exhales a very penetrating odor. The taste is bitter. M. Braconnot gives the following analysis of absinth:—Volatile oil, a resinous and very bitter substance, bitter animal matter, chlorophyll, albumen, peculiar starchy matter, animal matter of slight savor, and salt.

The preparations containing only the fixed principles are—essence or extract of absinth. *R.* Dried tops of absinth, pulverize coarsely, moisten with half its weight of water, treat by displacement, and evaporate the liquid to the consistence of an extract. This is the preparation I have used in the following experiments.

THERAPEUTICS.

"Absinth possesses in a high degree the same characters as chamomile. Independently of its stomachic properties, it has also a peculiar action as an emmenagogue and anthelmintic. As a febrifuge, absinth, or (more commonly) wormwood, possesses more power than chamomile, but only in intermittent nervous fevers, arising from some miasmatic influence, yet in no way can it compete with quinine in the prevention of these fevers. It has also been used with advantage in ascites, but always combined with potash and other drugs, whose diuretic effect is probably affected by its adjuncts rather than by itself. It also possesses strongly tonic action, so that it can be placed in the class of tonics. Its bitterness is proverbial.

"The poisonous and inebriating effects produced in those who drink the *liqueur* of absinth, or cream of absinth [more common in France than in the United States] is undoubtedly due more to the plant than to the alcohol. This *liqueur* causes, in a feeble degree, certain intoxicating effects as a bitter narcotic. [With this statement I do not agree, but am disposed to attribute this power to some other principle than the bitter narcotic, as will be seen in the experiments to be cited.] The wine of absinth is most

commonly employed as an emmenagogue and diuretic. There is also a distilled water and an extract, which is administered in doses of four to sixteen grammes" [one to four drachms].—*Trousseau and Pidoux*.

"Absinthism is a name given to the variety of alcoholism, whether acute or chronic, which is caused by the abuse of the *liqueur* called absinth. Absinthism is, more frequently than alcoholism, followed by mania, softening of the brain, or by general paralysis. This seems to be owing to the poisonous action of the essences which enter into the composition of this dangerous *liqueur*."—*Dictionnaire de Médecine, &c.*, par E. Littré et Ch. Robin [Nysten revised], edition of 1865.

However adulterated may be the *liqueur* sold under the name of *absinthe*, and that it is very commonly adulterated there is no doubt, the paralysis is probably due to alcohol affecting, secondarily, the action of the spinal cord, while the mania and softening of the brain may occur in the same manner; but the immediate effects, such as epileptiform convulsions and nervous debility—the former especially—are due to absinth itself. The alcohol, also, which constitutes a large portion in the composition of the *liqueur*, may produce its peculiar symptoms at the same time with those caused by the absinth itself.

My instructor and friend, Dr. Magnan, while an *interne* at the Hôpital Bicêtre, was led to this opinion by the peculiar symptoms presented in a patient at that institution, an account of which I will give as concisely as possible.

"A grocer at Paris was unfortunate in business and established a shop to sell wines at retail (*commerce de vins*), and soon got into the habit of taking a glass of cognac with his customers. This he did two years, and the consequence was enfeebled digestion and dyspepsia, with great pain in his stomach after eating. Finally, he began drinking *absinthe*, and found for a short time a stimulus to his system which he had before lacked, but in the morning vomiting, with great trembling of hands and tongue. His sleep was much disturbed by dreams and restlessness. Shortly after he had begun this last vicious habit, often taking five or six glasses of *liqueur* during the day, he attended a funeral ceremony at a church, and, in the very midst of the services, he was seized suddenly with a fit, *losing consciousness*, falling down, biting his tongue, making grimaces, agitating his extremities, and foaming at the mouth. After recovering from this attack, he was taken home,

but did not give up his bad habit, though oftentimes he had vertigo and other symptoms. After another of these attacks he was taken to the Hôpital Bicêtre, from the records of which I make the following extracts:—

"1863, Oct. 30th. He remains very uneasy, after crying all night. In the morning is found in his bed in a straight jacket, pale and bloated, with a leaden expression of countenance, his face covered with sweat, his tongue torn on its borders on both sides, the belly hard from constipation, urine reddish. The albumen, deposited by heat and nitric acid, fills half the tube. Sensibility throughout all the body exalted. Has a great deal of trembling of the arms, legs, lips, and tongue when extended. The voice is feeble; speech hesitating and trembling. He is agitated; keeps his eyes wandering; is incoherent; changes his conversation every moment; has no idea where he is; thinks he is in the street, at his own house, in his shop; imagines he sees his wife and children; warns them of a menacing danger; turns himself; sees at the foot of his bed rats, spiders; sees the flames of a fire; is frightened and cries out. He passes the whole time in the midst of such anguish. Laudanum, 30 drops, prescribed.

"Nov. 1st. No sleep during the night. Hallucinations continue. Complains of a pain in each side of his chest; frequent respiration; no cough; percussion and auscultation normal; pulse frequent and intermittent; the pulsations of the heart very irregular and jerking—urine still reddish, but less albumen. After this he improved, and left the hospital on the 20th, with an amelioration of symptoms, viz.: less trembling of hands, voice clear, expression of face more natural with some color; digestive functions good, sleep calm, and not the least trace of albumen in the urine.

"1864, April 28th. Cl. . . . brought back to the Hospice Bicêtre. Reports he has not ceased drinking since his departure; drinks less of brandy and still keeps to the *absinthe*. Has been intoxicated several times, and in these moments became very irritable and struck his wife. He has had an effusion in the chest, which confined him to his bed three weeks, and his health has been so bad as to oblige him to give up working. Five days ago, after drinking freely of *absinthe*, he had a fit like the two he had last year. At his entrance he appeared in the same condition as before, with, perhaps, more frequent hallucinations, pain at epigastrium, but no constipation.

"April 30th. Symptoms of pulmonic trouble, suberepitant râles, dulness, &c. Urine troubled, and leaves albumen in test tube to the extent of one-fifth.

"May 2d. The albumen begins to disappear.

"8th. No more hallucinations or dreams.

"20th. Convalescent; leaves the Hospital; cough has ceased; trembling of hands and tongue also disappeared. Has not been heard of since his departure."

In the first part of the foregoing case, we see the action of alcohol, called alcoholism, which induces him to drink *absinthe*, and now he has nausea in the mornings with vomiting, fainting, etc. He passes nearly a year in this state, and *suddenly* has an attack resembling epilepsy, viz.: distortion of the features, convulsions, foaming at the mouth, biting his tongue, and complete loss of consciousness for the moment. But, while at the Hospital, not a symptom occurred with a suspicious tendency to epilepsy. This same thing happens again, which induces his return to the Hospital, where no recurrence of the convulsions took place.

What is the cause of these epileptiform convulsions? Is it hereditary, traumatic or constitutional? There is no evidence to show this. Whilst at the hospital, he had no attack of epilepsy, and prior to his habit of drinking *absinthe* he had none. He was 32 years old. He had met with no accident in which the cranium had been injured; and, in fact, every circumstance points to *absinthe* as the cause. It has generally been supposed in France that epilepsy was caused sometimes by alcohol, but this man had been drinking *eau de vie* for two years, and no such symptom had occurred until after he had taken up the habit of drinking *absinthe*.

Now, the principal substances contained in the *liqueur* called *absinthe* are, generally, alcohol and the essences of anise and absinth (wormwood). The other substances vary in their proportions, and produce none of the symptoms noticed in absinthism. Each of these substances has been subjected separately to the test of experiment on animals, and the most conclusive results have been obtained. In the first experiment six grammes (3iiss.) of essence of anise was introduced by the aid of an œsophagean sound into the stomach of a fasting dog, with no apparent abnormal conditions, and afterwards, by the same method, 22 grammes (3vss.), and there was neither diarrhoea nor vomiting, and not the slightest symptom of a convulsion. He had some frothing at the mouth, an accelerated

respiration, but he was perfectly bright, jumped about, played round, and ate with voracity. These peculiar symptoms lasted but half an hour, and eight hours after he had a soft stool, which exhaled a strong odor of anise.

With regard to absinth, there have been difficulties in experimenting on a dog, as vomiting and diarrhoea have occurred, preventing the absorption of the poison; but by the use of the œsophagean tube, capsules of gelatine, or by wrapping the drug in meat or soft bread, M. Magnan succeeded in keeping the absinth long enough in the stomach to produce its effects.

Experiment, 8 hrs. 50 min.—A dog was made to swallow six capsules of flour and bread, enclosing about four grammes of essence of absinth (3i.).

9.25.—Had a chill. Discharged urine four times in succession.

9.30.—Seems uneasy; casts his eyes round, growls, runs into a corner, folds himself up, sits up, trembles all over, turns and presses his head against his chest; winks his left eye, which is turned towards the assistants, as if he was about to attack them.

9.33.—Jumps against the door, strives to escape; is taken with tonic convulsions, falls upon his left side, turns himself round towards the right in the form of a bow, raises his legs and brings them together in such a way that the animal touches the ground only with the middle of his left side. In twenty seconds, clonic convulsions very quick and irregular, frothing at the mouth, stertorous and frequent respiration.

9.36.—Is stretched on the ground, remains motionless for some seconds, then moves his paws as if running; struggles vainly to rise. At the end of a minute he remains stretched out, without movement. Respiration noisy and frequent. The mouth is stretched open, the tongue hangs out.

9.40.—He raises his head, looks round, rises, and crouches under a chair.

10.—On being offered some meat, he approaches and eats. He is put in the garden; he runs and jumps, has a hard stool, of the size of a horse-chestnut, and streaked with blood.

He afterwards recovered.

March 31st.—Another experiment, with the same dose, produced the same effects, though rather more violent, from which the dog recovered.

As guinea pigs do not vomit, the effects of absinth are more easily produced on them.

Experiment, June 6th, 1864, 9 hrs. 10

min.—Three grammes of absinth (45 grs.) were injected, by the aid of a sound, into the stomach of a guinea-pig, fasting.

9.20.—Attempts to vomit.

9.45.—Slight convulsive shocks, at first in the head and then in the rest of the body. Tonic convulsions, with slight shocks; hugs the wall of his cage, strongly contracting his muscles; tries to escape, grasps the sides of his cage, looks frightened, remains motionless, bites convulsively the sides of his cage, walks only by bounds and convulsive jerks.

9.50.—Shocks like those caused by electricity. Tonic convulsions; he curls himself over, the head bent towards the side. Clonic convulsions. Is stretched out, with his paws scratching the ground and beating the air; frequent respiration; he sits up; convulsive shocks repeated; he makes a bound, and then gathers himself up. Aspect stupid; breathlessness. He does not eat during the day, and breathes with difficulty. Occasionally cries out sharply. Shocks in the muscles continue.

June 7th.—Stupid; will not eat.

8th.—Dies at 11 o'clock.

Autopsy (two hours after death).—Nervous centres, especially the spinal cord, congested. They present, in places, some infiltration of blood, giving to these parts an appearance of congestion. The heart is soft and flaccid, the right cavities filled with black clots, soft and semi-fluid; the left ventricle shows a little clot, soft and black. Stomach strongly vascular, and contains a greenish mixture, smelling strongly of absinth. The liver is congested and friable. The gall-bladder is very much distended by a yellowish liquid, in the midst of which float some flocculi, having the appearance of albumen. The kidneys present no intense vascularity."

The guinea-pigs which have been forced to take a dose of absinth in less quantity than 1.50 grammes (22 grains), did not die, but exhibited certain muscular shocks or twitches, but no attacks similar to epilepsy.

Rabbits which have taken less than 2 grammes (30 grains) exhibited drunkenness, stupor, insensibility. On being pricked or pinched, they did not stir; they allowed themselves to be lifted up, and fell in a mass. Before many minutes they recovered, and appeared as before the experiment.

Cocks and hens exhibit no abnormal symptoms after the ingestion of essence of absinth or anise in doses even of 4 grammes (3i.).

Experiment, June 27th, 1 o'clock.—A mixture of 3 grammes of alcohol (45 grs.)

and 2 grammes of essence of absinth (30 grs.) is injected into the stomach of a guinea-pig apparently in good health.

1.20.—Motionless.

1.25.—Totters; the posterior extremities drag along one side, first to the right and then to the left; the animal stops, makes some steps, and lets the posterior half of the body fall on one side, the anterior remaining upright.

1.30.—Sensibility preserved; makes several steps without falling.

1.55.—Respiration frequent, jerking; sometimes a quick contraction of the diaphragm.

2.10.—Twitches in head and back; keeps in a corner.

2.20.—Series of convulsive twitches, occurring especially in the anterior part of the body. He gathers himself up; has muscular shocks, which grow stronger, and finally he falls on the side and remains motionless.

4.—Stupor; sensibility obtuse, especially in the posterior part of the body.

The next day, the respiration grows more frequent, and a serous liquid is discharged from the nostrils. Respiration each moment becomes quicker and more difficult, followed by death.

Autopsy (three hours after death).—Congestion of cerebrum and spinal cord. Right lung hepatized throughout; left lung congested. Right cavities of heart filled with soft and black clots; nothing in left cavities. Kidneys congested. Stomach filled with a greenish fluid; mucous coat softened.—MAGNAN.*

[To be continued.]

PRESERVING ANATOMICAL SPECIMENS.—In a letter to the *Chicago Medical Journal*, Prof. Freer writes:—"I saw a preparation by the phenique acid method, which was perfectly pliable, and plump as a recent dissection; even the small joints of the fingers were as flexible as in the most recent state, and, at the same time, the specimen—which was a well-dissected arm—was as dry as leather, and without odor, other than from the acid, which is not at all disagreeable. This is something worth looking into—if the acid is not too expensive, the method is invaluable for medical colleges. The process by tannic acid must be very tedious and expensive."

* Vide *L'Union Médicale*, Aug. 4th and 9th, 1864, Nos. 92 and 94. "Des Accidents Déterminés par l'Abus de la Liqueur d'Absinthe."

came away with its placenta and membranes not ruptured. Five (5) minutes later, the placenta of the first child was born. There was no sign of blood with either, nor was the amount of fluid large. The second child died at 11, P.M., respiration never having been properly established. The first child, dressed, weighed three and a half (3½) pounds. It lived till the 3d of the following September, when it died of cholera infantum.

The mother never had any secretion of milk. The salivation continued till the 31st of March (1856), when it was very slight. During this time, there were days when it ceased altogether, and again when it amounted to eight (8) pints in twelve hours.

EXPERIMENTS AND OBSERVATIONS ON ABSINTH AND ABSINTHISM.

(Concluded from page 71.)

I HAVE thus given the various opinions held by observers as to the physiological effects of absinth, and now I wish to present some of the results of my own experience, while studying its effects on animals. It may seem hardly worth while to call the attention of American physicians to this drug; but, as there seems to be an erroneous opinion held as to its innocence, I think it right to show that absinth, or wormwood, has its toxic effects, and those pretty decided ones. One American writer on *Materia Medica and Therapeutics** says that, "Overdoses produce gastric pain, nausea and vomiting; occasionally, headache and giddiness, with dulness and confusion of ideas, have been observed after large doses, and are probably due to the essential oil that the plant contains. . . . A male adult, who had taken about half an ounce of the oil, was insensible and convulsed; his jaws were clenched, and he foamed at the mouth. . . . Like other tonics, it has been recommended in epilepsy."

The author of this work does not say whether any dose of the essence is really fatal, nor does he mention that an epileptiform fit may be caused by an overdose; but he cites one case where this has occurred. Now, we assert that absinth (essence) will produce a veritable attack of epilepsy, and will even induce death, if a large enough dose has been administered. I refer my readers to the case occurring at the *Hôpital Bicêtre*, to show that this substance

* *Stillé on Therapeutics and Materia Medica*. Philadelphia: Blanchard & Lea. Vol. ii, p. 619.

will produce epilepsy in man, and there are many other similar cases recorded in the Paris hospitals, though some are erroneously attributed to alcohol.

I have called attention to the experiments of M. Magnan at the aforesaid hospital, for a confirmation of this opinion. I will, also, mention some others that we performed together at the *Hôpital St. Anne*, a new and large hospital, finished last spring, to receive diseases of the brain and nervous system, and of which M. Magnan is one of four resident physicians.

It has been supposed that the epilepsy occurring in absinth drinkers was owing to the alcohol and other substances composing the *liqueur*, which affect the brain and thus cause convulsions. We think that these convulsions have occurred after drinking of a larger amount than usual of the *liqueur*, *absinthe*; and that absinth itself brings about epilepsy by its *direct* intoxication, and not in consequence of the brain becoming diseased by continuous abuse. I do not intend to give the idea that epilepsy may not occur in consequence of a lesion produced by a long abuse of alcohol, and where absinth has not been taken. But, in these cases, there are lesions in the brain, such as thickening of the meninges, and sometimes, also, superficial softening, and alcohol by its super-excitation may produce an attack of convulsions, while, on the other hand, absinth produces epilepsy without any such lesions having been observed. Briefly, absinth in one overdose will produce epileptiform convulsions, while alcohol, primarily, can produce such effects only in exceptional cases, as in a person who has had epilepsy, or who is predisposed thereto by hereditary influences. To confirm this view, I will relate the following experiments:—

Experiment 1.—2 hours 37 min. 1.75 grammes (3ss.) of essence of absinth (very pure) was introduced into the stomach of a guinea-pig, in good health, by the œsophagean bougie.

2.47.—Chills.

2.52.—Scratches his head and face with paws.

2.55.—Muscular tremblings in anterior part of body.

2.57.—Twitches muscles of head and neck; fixes his paws and contracts muscles of legs.

3.00.—Sensibility preserved,

3.35.—Series of muscular twitches, with rigidity of body and legs. Chattering of teeth; head turned over right shoulder. Sensibility obtuse. Furiously bites wood

of the drawer in which he is placed. Head and shoulders twitch violently. Stands up suddenly, and falls over on to side.

3.40.—Movement of gyration from left to right.

3.43.—Convulsions, after a tremendous bound high into the air, like the bounce of a rubber ball, and falls over on to his side, foaming at the mouth, clenching his teeth, moving all four legs as if running, and then

3.46, remains pretty quiet, and apparently dead, though the heart beats until

3.50, when he died.

Autopsy.—The brain and spinal axis have not the slightest congestion or clot, nor are they excessively pale. No excess of serum in any of the ventricles. The lungs have an appearance like marble, and are in a state of slight congestion. No peculiar appearance about the heart. The stomach filled with some semi-fluid substance like food, and smells strongly of absinth, as does the whole body. The gall-bladder distended with fluid. No rupture of trachea, cesophagus or stomach.

Experiment 2. Alcohol.—At 2 hrs. 27 min., injected into the stomach of a guinea-pig, by a bougie, 5 grammes of alcohol.

2.40.—Has the appearance of an inebriate, and paralysis of posterior portion of body. On being pricked, walks with fore legs, dragging along his hind legs.

2.46.—Trembling of hind legs; utters little cries, and lies extended on his side; otherwise motionless.

2.50.—Cries on being pinched, and withdraws the part touched, with trembling of extremities.

2.58.—Continuance of same symptoms.

3.07.—Remains motionless on back, with exception of slight tremblings of posterior, and sometimes of anterior limbs. Utters, now and then, low cries.

3.12.—Sensibility obtuse; posterior limbs quiet, and the anterior trembling.

3.20.—Perfect resolution and drunkenness, which continued till his heart ceased beating, at the hour of 11.20.

The autopsy revealed very intense congestion of the stomach, and of the intestines for one third of their extent. The intestine was filled with gas in part of its length, and, near the pyloric orifice, with a gummy liquid, which looked muco-purulent. Near the cardiac and pyloric orifices were the centres of a mucous ulceration, surrounded by a very intense congestion. The duodenum had a most beautiful appearance, like crimson velvet, showing the first stages of inflammation, each capillary being wonderfully defined, and illustrating

the anastomoses. The bladder was distended with urine, containing a large amount of albumen. The whole body smells strongly of alcohol. The brain showed a most intense congestion. The cortical substance was of a rose color. All the arteries and veins were turgid with blood. The spinal axis, also, showed marks of great congestion.

Experiment 3. With Absinth.—3 hrs. 45 min. Injected 4.50 grammes of absinth into the stomach of a rabbit.

4.25.—Holds himself stiffly, with muscles of leg strongly contracted, in a state of demi-stupor. Sensibility obtuse; keeps the position in which he is placed; respiration quickened and short.

4.35.—Little convulsive twitches of muscles, gradually increasing; champing of jaws, the head turned to the right side, foaming at the mouth. Convulsive movements grow more intense, till an epileptiform convulsion commences, with the head turned over backwards, and the animal falls over on to side, with all the extremities agitated and beating the air; rises again, and falls over immediately, turning the eyes and rolling over the membrana nictitans; the right pupil contracted more than the left.

4.45.—No less than ten convulsions have occurred, the strength gradually growing less.

4.48.—Head now turned to the left side.

5.10.—Convulsions still continue, but the strength very much reduced.

6.20.—Right pupil contracted, the left slightly dilated; slight movements in legs, though the animal lies in a mass; respiration very feeble.

12.00.—Respiration stertorous.

1.02.—Death.

Post Mortem.—The hemispheres, being uncovered, present no notable alteration, though the right side seems to have a stronger vascular injection than the left. The bulb and spinal axis appear normal. The cerebral substance gives a strong odor of absinth. The sinuses seem black and congested. Sections, taken at random through the brain-mass, reveal nothing abnormal. The heart is very large; vessels strongly injected. On cutting into the vena cava, black coagula escape. Right ventricle filled with a black coagulum. Left ventricle has a small amount of black blood; the walls sufficiently firm. Lungs of a rose color, devoid of air, as after collapse, resembling carnification. No crepitation felt between the fingers; on the lower margin of both sides a dark-red tint, where

the tissue is slightly injected. Smell of absinth. Stomach has no ecchymosed spots on the external surface; half of its bulk occupied with food smelling strongly of absinth. Mucous coat pale or brownish in various places, covered with a brownish mucus; no appearance of ulceration. Nothing remarkable in the intestines. The liver smells strongly of absinth. The bladder almost empty.

Experiment 4. With Absinth.—2 hrs. 10 min. 80 grammes of absinth injected into the stomach of a frog. No vomiting.

2.30.—Remains in his place, and, when pricked, arches his back, holding himself stiffly. No convulsions.

Experiment 5. With Alcohol.—Seventy-five one hundredths of a gramme injected into the stomach of another frog, and stupor ensued shortly after. No vomiting. He died in the evening, and the autopsy revealed inflammation of the alimentary canal.

Experiment 6. With Alcohol.—3ijss. of alcohol was placed in the stomach of a rabbit, through an œsophagean tube.

In fifteen minutes, movements sluggish.

In twenty minutes, posterior limbs partially paralyzed.

In half an hour, lies stretched out on belly, perfectly quiet, but, when aroused, moves with great difficulty, tumbling first to one side and then to the other.

In thirty-five minutes, lies with hind legs extended, resting on belly and forelegs; when excited to move, hind legs remain extended; sensibility preserved.

In forty minutes, anterior members paralyzed, but hind legs move more readily than before.

In three quarters of an hour, the animal moves with great difficulty, and does not seem disposed to change its position. I left the animal, soon after, extended on its side, breathing slowly, and apparently *in articulo mortis*. The next morning, it was dead.

Let us now examine the analogy between the two drugs, absinth and alcohol, in their therapeutical effects, and we consider them entirely distinct and opposite. We will compare, side by side, the different symptoms as detailed in these last six experiments performed by myself [these six being selected from a series of thirty conducted by M. Magnan and myself in Paris last spring, with the exception of the last mentioned, which I conducted lately).

SYMPTOMS.

Absinth.

Animal perfectly well for fifteen minutes, at the least, after the ingestion; with the exception of a few muscular twitchings and a slight uneasiness.

Muscular agitation, commencing in the *anterior* portion of the body.

No paralysis.

Epileptiform convulsions and rigidity, resulting in a rapid death.

No apparent lesion, except, perhaps, a *slight* cerebral congestion, showing the cause of death to be intoxication of the poison.

Alcohol.

In a very few minutes symptoms of inebriation, resulting in torpor.

Paralysis, commencing in *posterior* extremities, and then extending to the anterior.

Paralysis of both posterior and anterior extremities in succession.

No convulsions. Stupor, coma, resolution and a gradual death.

Lesions of the brain and of the alimentary canal; gastritis and enteritis might have supervened, had the animals lived long enough for their development.

The epileptiform convulsions occurring in absinthism are the result of poisoning by absinth, and are not attributable to the alcohol contained in its *liqueur*.

The paralysis in alcoholism (whether by *absinth* or *cognac*) is due to the alcohol and not to the absinth.

ACTION OF SUGAR ON PERCHLORIDE OF IRON.—We are indebted to a correspondent for the following abstract from the *Revue Médicale* of Dec. 31, 1867:—

In reply to a letter by M. Caradec with regard to the action of sugar on the perchloride of iron, M. Adrian says:—

“When to 125 grammes of distilled water 25 drops of perchloride of iron is added, the liquid obtained is of a slight amber color, and may be kept for 24 and even 48 hours without undergoing alteration. If, on the other hand, the same proportion of perchloride is dropped into a mixture of twenty-five grammes of syrup of sugar with one hundred grammes of distilled water, the liquid immediately takes a much deeper color, and after some hours ferridcyanide of potassa shows the reduction of the iron salt. This transformation becomes much more evident at the end of twelve hours, and after twenty-four hours the greater part of the sesqui-salt is changed into a proto-salt. According to this experiment, it is evident that sugar produces a modification in the perchloride of iron, recognizable by the change of color; and the presence of protochloride of iron in the solution furnishes very evident proof of the alteration produced.” He found that the same change takes place even more rapidly with other syrups, as that of marsh mallow, tolu, codeine, morphine, &c., or