

think of the constant, patient, self-denying labour which is demanded from those into whose hands the practical work of idiot education falls, you will not, I think, be disinclined to find some portion of the means by which this work is carried on. When you think of the idiot rescued from the slough of wretchedness and brutishness, and made a happy and sociable human being, you will not, I think, for want of pecuniary support, allow the institution to languish which has been founded by one of your most estimable townsmen, and which is occupied, as I am informed, to the extent of two-thirds of its accommodation, by idiots from your own streets. When you think of the narrow home of the artizan or small trader, which is rendered intolerable by the presence of an untrained idiot child; when you think of the waste of time—which is waste of sustenance to the working man—involved in the most unsatisfactory care of a single idiot in a small home, you will not, I think, be disinclined to support an institution which will relieve such homes from the *incubus* with which they are cursed. You who rejoice in the glorious possession of manly strength and mental vigour will not withhold the throb of sympathy and the hand of help from those whose condition, before our time, was without help and without hope. The men of Birmingham—the men of steel—will not steel their hearts against such a claim on their charity, nor permit that the institution which has been founded to effect this good work shall be unable to discharge its full mission of beneficence for want of funds.

The Use of Digitalis in Maniacal Excitement. By W. JULIUS MICKLE, M.D., Medical Superintendent, Grove Hall Asylum, Bow.

Though many writers have advocated the use of digitalis in various forms of insanity—such as acute, paralytic, or epileptic mania—yet there appears to be great diversity of opinion as to its efficacy, great variety in the methods of administering it, and a wide range in the quantities prescribed. While one has been content to order five to ten minims of the tincture three or four times a day, another has given, in similar cases, single doses of half-an-ounce of the same preparation.

Having used a variety of medicines for the alleviation of restlessness, agitation, quarrelsome irritability, noisy and threatening language, or impulsive violence, as exhibited in

certain forms of insanity, I was struck by the effects produced on such symptoms in several instances by digitalis. A considerable number of cases under care, in which one or more of the above-mentioned symptoms existed to an extreme degree, have been subjected to the foxglove treatment, and the benefit derived therefrom has been sufficiently gratifying to encourage the further use of this calmative. It may be mentioned that in none of the cases treated by digitalis have other means of securing a favourable result been neglected. Their general management has been of the character usually adopted with other patients suffering from similar symptoms, or with the same patients, in preceding or subsequent attacks, when they were not placed under digitalis treatment. Outdoor exercise and full diet have been freely allowed, and means have been adopted to avoid irritation and to distract the mind from morbid to healthy objects of attention. Nor is any attempt made to attach extreme importance to the use of this or any drug in the treatment of insanity. While venturing an opinion that digitalis is an important auxiliary for the control of certain symptoms, and is, therefore, of real benefit, it is not forgotten that some authorities have questioned the wisdom of checking the outward expressions of cerebral excitement. It will also be noticed that in a majority of the cases mentioned below the digitalis treatment bore but little reference to their cure, and was employed for the mitigation of distressing, exhausting, or dangerous symptoms in chronic and, too often, incurable affections. A minority of cases belonged to the recent curable forms of insanity.

Tincture of digitalis (B. P.) has been the preparation almost exclusively used, and of this the average dose has been thirty minims three times a day.

Among the cases treated by digitalis were many of *chronic mania*, wherein the course of the disease was chequered by *paroxysms or exacerbations of excitement*, in which the patients became agitated, restless, noisy, filthy, blasphemous, irritable, quarrelsome, threatening, destructive, violent, or impulsive, enraged by delusions, or exasperated to frenzy by vivid hallucinations. These symptoms were variously combined in different cases. In some of them the benefit derived from digitalis was great; in others, moderate; and in a third set, slight or doubtful. In the first set of cases, where the benefit resulting from treatment was great, the length of time during which the drug was taken varied from 7 to 70 days—average,

26½ days; in the second (moderate benefit), from 9 to 21 days—average, 19 days; and in the third, from 3 to 21 days—average, 10 days. These numbers refer to the length of each separate unbroken period of administration. Several patients were under digitalis on two or more such distinct and separate occasions. The great relative difference in duration of many of the periods of treatment was partly due to the circumstance that in some patients the paroxysms were habitually short and of frequent occurrence, while in others the paroxysms were more persistent and protracted, but were separated by longer intervals of time. In the hope of preventing the frequently recurring outbursts in the former class, wherein maniacal paroxysms were numerous, but short in duration, many of them were kept steadily under the influence of the drug for weeks or months; while in some of the latter, whose paroxysmal excitement was less frequent, there was no obvious therapeutical or experimental necessity for so prolonged an administration of the agent. Most of those above-mentioned as suffering from paroxysmal maniacal outbursts took half a drachm of the tincture three times a day, a few had ℥xl three times, and one or two, ℥xlv to ℥lx twice a day.

In others of the cases of *chronic mania* treated by digitalis the excitement was more diffused and uniform, *was continuous or subcontinuous*, and underwent only moderate exacerbations. In them were variously combined such symptoms as incessant restless agitation, noisy or mischievous excitement, threatening or assertive language, insubordinate, violent, impulsive, or destructive acts, hallucinations of hearing, delusions of personal exaltation, or of injury, annoyance, or persecution. The separate occasions on which digitalis was taken varied in length from 8 to 74 days, and the dose, usually ℥xxx three times a day, was in one case ℥xl, and in another ℥lx, twice daily. The continuous or subcontinuous character of the maniacal excitement of these patients contrasted with the paroxysmal nature of the furor and other symptoms of the chronic maniacs mentioned in the preceding paragraph.

More or less similar symptoms and treatment are noted in a few instances of chronic melancholia and dementia with great excitement or destructive impulse. The symptoms treated in the first stage of general paralysis were those of acute maniacal excitement with threatening language and dangerous impulses; and in the second stage, either paroxysms or exacerbations of noisy furor, with or without vivid hallucinations; or continuous chronic maniacal excite-

ment, characterised by restlessness and destructiveness, or by the incessant jabbering of an incoherent jargon of words. Concerning a few cases of acute or subacute mania, it need only be stated that they were treated for separate periods of from 7 to 30 days, and that the doses prescribed were about the same as those already mentioned.

In all, a considerable number of patients were treated by digitalis, and the condition of many of these was minutely noted and fully recorded from day to day. In the statistics which follow I have excluded administrations of which the records are incomplete, or in which, for a variety of reasons, the drug was not satisfactorily tested. The general results, however, in the cases omitted coincided with those obtained in the smaller number included in this short paper. The list deemed eligible for my purposes comprises forty-one individual patients, who were fully treated on sixty-six separate occasions; some being treated once, others twice, and others several times. The sixty-six trials were distributed thus:—

Chronic mania with great excitement,	25 persons,	on 44 occasions.
Melancholia and dementia	” 5	” 8
General paralysis	” 5	” 6
Acute and subacute mania	” 5	” 8
Total	- 41	” 66

The *results* of the sixty-six trials are added in general terms and in a tabular form. The first two columns include instances in which digitalis was decidedly beneficial, though in varying degree, and comprise 77 per cent. of the whole number.

Form of Insanity, with Great Excitement, &c.	Degree of Benefit from Digitalis.		
	Great Benefit.	Moderate Benefit.	Doubtful or no Benefit.
Chronic mania	18	16	10
Chronic melancholia and dementia	2	3	3
General paralysis	2	3	1
Acute and subacute mania	1	6	1
Total	23	28	15

Chronic mania is the only form in the Table of which the cases accurately observed are sufficient in number for the purposes of this enquiry, and attention will therefore be confined to them. The general effects of digitalis treatment had been previously watched in a number of patients, especially general paralytics.

A majority of the tabulated cases, indeed, fall under the head of chronic mania, and, in relation to the treatment, these may be subdivided for convenience into the two classes already mentioned, namely:—

- I.—Those with paroxysmal excitement or impulse, and
- II.—Those with subcontinuous or continuous excitement.

On tabulating the result of digitalis treatment, according as it was decisively, comparatively, or doubtfully beneficial, a marked difference is revealed between the two classes into which the cases of chronic mania are thus provisionally divided.

Treated by Digitalis.	Benefit from Digitalis.		
	Great.	Moderate.	Questionable.
Chronic mania with paroxysmal excitement	16	8	9
Chronic mania with subcontinuous excitement	2	8	1

It is apparent at a glance that the class more decisively benefited by digitalis while under care, was that consisting of varieties of chronic mania with paroxysmal excitement or impulse. Nor is this statement made without recognising the fallacies that may attend conclusions based on the apparent effects of treatment on such cases. The striking results obtained in a few earlier cases led to a more special extension of the digitalis treatment to the class in question. Various forms of maniacal excitement in general paralytics were also alleviated, and acute or sub-acute mania, and chronic mania with nearly continual excitement, were usually moderated thereby. In some instances it was noticed that when symptoms had been controlled for a time by digitalis, after which its use had been omitted, the later course of the affection was milder, as if the nervous power was recuperated during the period of quietude enforced by the drug.

Short details of a few of the cases of chronic paroxysmal mania treated by foxglove are added here, and it has been preferred to exemplify the failures, as well as the complete or partial successes, in the use of this agent. Observations made on the pulse, in these and similar cases, are appended.

CASE I.—A tall, thin, rather pallid woman, aged 63. Had been insane for eighteen months, and was the subject of chronic mania. She had frequent and prolonged paroxysms of a loathsome form, in which the intellect and moral sense seemed equally perturbed, and in which she kept giving loud and often rhythmical utterance to the foulest obscenity and blasphemy. She also became noisy and restless at night, but the nocturnal symptoms were alleviated by chloral hydrate. Thirty minims of tincture of digitalis were ordered to be taken three times a day during one of her attacks when the obscenity had become incessant and extreme. She grew quieter after using the drug for several days, and some anorexia and slight gastric disturbance supervened. Subsequently, the foxglove was ordered to be taken only when an outburst of obscenity seemed to prelude the full development of her former attacks. A single dose often cut short the paroxysms in a few minutes, but did not always exert so immediate a control, and in the latter event the dose was repeated in an hour or two. Again and again I had the opportunity of witnessing its marvellously calmative effect, by means of which she was kept in a state of almost complete quietude for several months. When the use of the medicine was omitted, the threatening paroxysm did not subside spontaneously, but gathered strength. The pulse-average usually rose above 100 during excitement; continued at an average of 95 when she was under the effect, but not yet under the control, of the digitalis; and sank to an average of 79 when she was quieted thereby; the average normal pulse during the intermissions when she was quiet and without medicine being 75.

CASE II.—Chronic mania with paroxysmal excitement. A healthy and fairly nourished male, aged 32. Insanity followed intemperance and cranial injury, and is of four years' duration, three of which he has passed in this asylum. He exhibits hallucinations of hearing, and fancies that imaginary persons malign him. His memory is defective, and he becomes confused and incoherent in conversation. At times, paroxysmal excitement occurs, during which he is extremely noisy and impulsive, apparently seeing and hearing his

imaginary traducers, yelling at them in reply, and gesticulating wildly. These paroxysms were wont to recur frequently, and, without treatment, usually lasted some days or a week. While suffering a severe attack, about a year ago, he was placed on thirty minims of tincture of digitalis three times a day, and so decided and rapid was the resulting benefit that the administration was continued for ten weeks, during which time excitement was very much diminished in frequency and degree. The constant use of the medicine was then omitted. Paroxysms of the former character are always rapidly checked by foxglove, and on four subsequent occasions he has been kept under its influence for periods varying from eleven to twenty-five days, and with results as happy as on the first occasion of its use. His normal pulse is soft and averages 64; when he is excited the average is 79; and when quieted by digitalis, $71\frac{1}{2}$. The heart sounds are natural, the apex beat is felt a little lower and more to the left than is usual. The medicine has never given rise to any gastric disturbance.

CASE III.—Chronic mania with paroxysmal excitement in a powerful muscular soldier, aged 31 years. When first placed under digitalis treatment his residence here was of five months, and his insanity of two years' duration. His delusions are wild, disconnected, and extravagant, relating principally to his person, prowess, and adventures. He displays exacerbations of maniacal excitement, in which he becomes restless, quarrelsome, impulsive, noisily abusive and threatening, uttering fantastic delusions of ill-treatment, and volunteering to annihilate the objects of his rage. This continues for several days if untreated. During a severe exacerbation he was directed to take half a drachm of tincture of digitalis three times a day, and so decisively did it keep the excitement modified and reduced to mere loquacity, that its use was steadily persevered in for nine weeks. But this improvement was not maintained after the omission of foxglove. The maniacal paroxysms recurred with such violence that in a fortnight I was fain to return to the former treatment, which again rapidly reduced excitement, so that on the next day he was quiet, and continued moderately calm during the second period of foxglove administration—six weeks. Excitement returned two days subsequently to the omission of the drug on the second occasion. The heart is healthy, and no digestive disorder has been caused by the treatment.

CASE IV.—Female, aged 24. Is thin, her skin and com-

plexion are delicate, her digestive and menstrual functions healthy. Insanity has existed four and a half years, and there is now chronic mania with paroxysms of great excitement. In the intervals between these she is quiet and industrious. When the maniacal paroxysms are coming on, she grows restless and agitated, the pupils are usually rather wider than natural, the pulse beats more than one hundred in the minute, the throbbing of the carotids occasionally becomes prominent, the head is sometimes slightly heated, and she talks loudly and constantly to herself. It is also when excitement is brewing that a strange peculiarity grows into bold relief, for she then talks aloud to and of herself in the second person; and if an attempt is made to engage her in conversation she does not make direct answer, but addresses herself in her replies. For example; on one occasion, when the paroxysmal excitement was developing while the patient was under my immediate notice, she was addressing herself in terms such as these:—"You are eccentric, Clara." "You are a little insane, my wench." "No, the doctor doesn't think you will do murder." "You are harmless," and so on. Question: "To whom do you speak?" Answer: "You speak to yourself, Clara." "Almighty God, dear, put it into your head." "It's God, Clara." A moment more, and she had burst into song. In exultant tones she began the lines—

"All things bright and beautiful,
All things wise and wonderful,"

and, borne away on the full tide of delirious excitement, she was soon alternately singing and shouting, or praying loudly with earnestness and pathos, the meanwhile incessantly stalking up and down with measured step and inflated mien.

When she is not under treatment, paroxysms such as this, and of several hours' duration, are apt to occur every day for weeks together. On several occasions it was found that digitalis was decisively calmative when used steadily for periods varying from eight to eighteen days, in doses of mxxx. to mxxlv. twice or three times a day, as required; and these doses were required most frequently at 6.30 and 9 a.m., as the paroxysms were chiefly matinal. During other periods the medicine was only given occasionally, being ordered for existing or threatened outbursts, and repeated if necessary. The benefit derived was unequivocal; excitement usually subsided after the first dose, and rarely withstood the influence

of the second. She was decidedly much worse when the digitalis was omitted for sake of experiment.

Average pulse (a.m.) when in the paroxysms and not under treatment...	106.
" " " " not yet quieted by digitalis	99.
" " when the paroxysms are moderated by digitalis	93.
" " aborted by digitalis...	88.
" " normal, inter-paroxysmal	86.

CASE V.—Chronic paroxysmal mania in a man aged 37 years, who is tall, well built, fairly nourished, and in good general health. Insanity has existed ten years, and he has passed most of this period in an asylum. Hallucinations and delusions are evident. He hears voices abusing him at night, and fancies himself the unwilling host of some strange creature which has gained access to his viscera, and which he asks to have excised. Paroxysms of excitement occur by day or by night, and on these occasions he shouts for hours together, uttering a tissue of obscene, blasphemous, and threatening words, and grows impulsively violent to those about him. Thirty minims of tincture of digitalis taken three times a day for nine weeks, kept him in a state of comparative quietude during the time, checking every outburst, and he continued somewhat better after the cessation of treatment.

Instances could be multiplied wherein the paroxysmal recurring excitement of chronic mania was *decisively* relieved by digitalis, but the five just detailed will suffice.

In the next two cases of chronic mania with paroxysmal excitement the degree of benefit was *moderate*.

CASE VI.—Fairly nourished and healthy male, aged 34. Ordinarily, he is quiet, and works in the ward. Is incoherent in conversation, and expresses a variety of delusions; such as, that he is the owner of this place and of the tower, that he was imposed on in his regiment, is annoyed by those about him, and persecuted by women. Under the influence of these, or similar, delusions, often vaguely expressed, excitement and negative feeling become wrought to an excessive pitch, and though at first merely restless and agitated, he finally shouts, screams, or acts impulsively towards attendants and patients. Tincture of digitalis was prescribed for him in doses of mxxx three times a day, and though it did not altogether abolish the symptoms, yet it kept them subdued during the five weeks of its administration. At the expiration of this time the appetite had become slightly affected, and the medicine was therefore omitted. Similar benefit was

derived on a subsequent occasion. The second sound of the heart is accentuated. At the close of the latter period of treatment the pulse was 48 and intermittent, the patient was very quiet, and the stomach unaffected. The intermittency of pulse continued for three days after the medicine was stopped. The morning pulse during the intermissions of excitement averages 75, and when he is kept quiet by digitalis the average is 73.

CASE VII.—A well-knit, muscular man, of lively and intelligent appearance, who has been insane a year and a half. *Æt.* 28. He suffers from chronic mania with vivid hallucinations of hearing, and, formerly, of sight. Though coherent in ordinary conversation, he becomes excited and confused on the subject of his delusions and hallucinations. He hears imaginary persons mocking at and maligning him, particularly a band of associates, who, headed by his arch-enemy, fiendishly torment him day and night. He shouts in reply, alternately expostulating and vituperating, and at times is so wrought up by exasperation that he becomes frenzied and wildly destructive, smashing the windows through which the voices of his persecutors appear to come. Half a drachm of tincture of digitalis taken three times a day was of doubtful value on one occasion; on a second, it kept the symptoms constantly moderated while the patient took it steadily for four weeks. Three days after the omission of the digitalis he broke a number of windows in impulsive fury, and at the end of a fortnight the medicine was resumed for seventeen days, in consequence of another severe outburst. The heart sounds are healthy, and anorexia was noticed on one day only.

Average pulse (a.m.) when moderately excited	...	...	78.
"	"	kept quiet by digitalis	...
"	"	inter-paroxysmal	...
			63 & 70.
			74.

Two cases are added in illustration of those in which the benefit derived from digitalis in chronic paroxysmal mania was doubtful, slight, or nil.

CASE VIII.—One was that of a man 50 years of age, who had been insane eighteen years. Usually he was quiet, was somewhat confused in conversation, and displayed various absurd delusions. Paroxysmal excitement frequently occurred, and generally lasted about one week, during which his dress was disordered, and his conduct obstinate and irritably impulsive. Hallucinations of sight and hearing were then vivid, and he was wont to become extremely noisy,

and would, if allowed, stand in one spot for hours, looking at the sun, gesticulating and shouting wildly, threatening and denouncing imaginary objects of rage. Doses of $\text{mxxx. tr. digitalis}$, four times a day, were prescribed at the outset of a severe paroxysm, but five days elapsed before quietude was restored, and during this period of excitement the pulse averaged 100, whereas, after he grew calm the average was 80. It cannot be said that any benefit resulted from the use of digitalis by this patient.

CASE IX.—Another case in which the effect of the drug did not seem to be beneficial, was that of a female aged 48, whose insanity was of sixteen months' duration, who had chronic mania, with exacerbations of quasi-hysterical excitement, during which there was great emotional disturbance, with mischievous conduct, restlessness, sleeplessness, etc. Tincture of digitalis, in doses of m xv. every four hours, was taken for twenty days, within which period she improved, relapsed, and again grew better. The doses were perhaps too small for a fair test.

Many other instances might be given to exemplify the various effects of digitalis when taken by those who suffer from recurrent paroxysmal excitement in the course of chronic mania. The limited space at disposal will preclude the introduction of cases illustrative of the effects obtained in chronic mania when the excitement was continuous, or nearly so.

The *pulse* was studied for long periods in many of the cases treated by digitalis. The general results may be mentioned. The figures are all *averages*, and usually refer to the morning pulse. The pulse-numbers said to be associated with benefit from the drug are the averages of those noted as soon as benefit was clearly produced. The "normal pulse" frequently mentioned was, in each case, the average of a number of days when the particular patient was quiet—or comparatively quiet, and not taking medicine.

In most cases of chronic *paroxysmal* mania the pulse rises considerably during the paroxysmal excitement; in a few it rises only to 80, 90, or 100; and in some it is unchanged, or even low,—unchanged or low, that is, at the moment when counted, which is necessarily one of less extreme excitement. Now digitalis, when it checks the paroxysms, is found to reduce the high pulse associated with them. Thus, in one patient the pulse sank from 135 to 110, and finally to 90, on three successive days while digitalis was exerting a decisive

control, and on a similar occasion the pulse fell from 100 to 88, and to 72, also on three successive days. In a second patient the pulse during the paroxysms averaged more than 100; digitalis reduced it to an average of 79, and quieted the patient. The normal pulse was 75. In a third, the standard pulse with excitement was 106; the average, immediately after excitement was quenched by digitalis, was 88. Again, in one case the pulse of excitement was reduced, when the paroxysms were controlled, from an average of 97 to one of 75; and in another from 115 to 82.

In cases of paroxysmal excitement benefited by digitalis, wherein the pulse of excitement was only slightly above the "normal pulse;" in one it was reduced from the average of 79 during excitement, to 71, which was the average of the pulse counted immediately after each paroxysm was quenched by the medicine; while that of another patient fell, from 78 during excitement, to 63, the normal pulse being 74.

In *subcontinuous* maniacal excitement, the pulse is occasionally very high, usually moderately or slightly high, and not unfrequently low. Whatever the pulse-frequency might be, the usual tendency of digitalis was to lessen the number of beats in the cases of this form treated by it. Thus, in several instances before me, the reduction of pulse coincidently with reduction of excitement by digitalis was from 100 to 97; from 100 to 85, and finally to 82; from 73 to 65; and from 59 to 39. These figures are, of course, the averages of numerous observations in each instance.

The pulse was not, however, necessarily or always retarded under digitalis in every case.

With every desire to avoid hasty theorising one could not resist the speculation that, in the cases benefited by digitalis, maniacal symptoms were associated with disorder of cerebral circulation (whether originating in local arterial spasm or relaxation), which modified the nutrition of the convolitional mass, and that the method of operation of digitalis was either by giving tone to the heart's action, so as to overcome the tendency to local vascular stasis and congestion, or by acting more directly on the peripheral arterioles—intracranial or other—and thus immediately influencing the cerebral circulation.

I have attempted to formulate the relations noticed in different varieties of cases as existing between the general symptoms, the pulse, and the effects of digitalis. It is matter of regret that, owing to the difficulty of using the sphygmo-

graph in most of the cases, the relation just mentioned is expressed as regards only one quality of the pulse—namely, its frequency. Each number is the average of several or numerous observations. In the first four sets of cases excitement was paroxysmal, in the last three it was more continuous.

(1.) In cases of chronic mania, with paroxysms of extreme maniacal excitement, wherein the pulse ranged very high (from 100 to 140) during the paroxysms, and the paroxysms were decisively relieved by digitalis; coincidently with this relief to excitement the high pulse associated with the paroxysms was reduced towards the normal pulse-frequency usual to the patient during the intermissions. Thus, in several cases:—

The high pulse of paroxysmal excitement in five cases was reduced by digitalis to averages of	}	79, the "normal" pulse of the same patient being	75
		88, " " "	86
		95, " " "	86
		78, " " "	75
		81, " " "	79

(2.) In cases of paroxysmal excitement associated with a high pulse, and therefore similar to those mentioned in (1), but wherein excitement continued more or less in spite of the digitalis given, reduction of the pulse-frequency was usually effected, and it often sank to about midway between the high pulse of an untreated paroxysm and the normal pulse of the particular patient during the intermissions.

No.	Average pulse in untreated paroxysms.	Average pulse when paroxysms were only partially controlled by digitalis.	Normal pulse of same patients. (Average.)
1	Above 100	95	75
2	106	99	86
3	" 100	97	75
4	112	89½	79
5	" 100	98	89

The lowering of pulse, therefore, varied in different cases. In one other patient the pulse continued very high for a time,

notwithstanding the excitement was partially reduced by full doses of digitalis.

(3.) Patients who had paroxysmal excitement in the course of chronic mania, in whom the frequency of the pulse during excitement was higher than the normal rate, and yet not very high; when their symptoms were decisively relieved by digitalis, the pulse of excitement was reduced towards or below the normal rate coincidentally with benefit being obtained.

For example, in several cases—

Pulse of excitement reduced by digitalis to an average of		Average normal pulse of same patient.	
(1.)	71½ ... ..	...	64
(2.)	73 ... ..	...	75
(3.)	63 ... ..	...	74

(4.) In cases wherein paroxysms of excitement and the pulse associated therewith were of the character described in (3); when certain paroxysms were not fully controlled, though partially benefited by digitalis, the pulse was reduced to a frequency intermediate between that of an untreated paroxysm and that of the normal pulse. The phenomena, therefore, are similar to those described in (2), *mutatis mutandis*.

(5.) In the subcontinuous excitement (with or without a degree of exacerbation) of chronic or sub-acute mania or general paralysis, in which the pulse of excitement ruled high; when decided benefit resulted from digitalis, the pulse of excitement was reduced coincidentally with benefit being derived.

Average pulse of excitement when not under treatment.	Excitement relieved by digitalis. Average pulse of same patients reduced to
100	97·7
100	85
92	82 (74 if nauseated.)

(6.) In several cases of active, nearly continual, excitement, with low or average "normal" pulse, which rose but little in consequence of excitement, benefit was derived from digitalis, and the pulse was coincidentally lowered towards or

below the normal rate : for example, to 72 (40, if nauseated) ; to 65 ; to 55 ; to 35, in different patients.

(7.) Decided reduction of the pulse from the use of digitalis was not always attended with *decided* benefit to sub-continuous excitement, for in several such instances, wherein the "normal" pulse and the pulse of excitement were both comparatively low, and the latter was greatly reduced by digitalis, the excitement was not quenched, though it was modified.

Reduction of pulse by digitalis, without decided benefit, to average of		Average normal pulse of same patient.					
(I.)	39.	...	...	...	...	...	59.
(II.)	45.	...	...	...	...	...	65.
(III.)	55.	...	...	...	...	...	65.
(IV.)	62.	..	...	...	...	...	70.

In a few cases where digitalis was not calmative until it caused sickness, reduction of the pulse was moderate, slight, or nil, prior to the emetic effect. When vomiting was caused by foxglove, the pulse was much abated as a rule, but in some patients, whose pulses rose very high during excitement, its lowering, associated with emesis, was moderate or even slight.

This leads to some notice of the gastric disturbance occasionally caused by digitalis. Anorexia, nausea, or vomiting were now and then produced, and the tongue was apt to be moist and pale, with a slightly creamy or dirty surface. In some of these cases excitement was quenched, in others it was moderated, in one unaffected, previous to decided gastric disturbance ensuing. In every case the excitement was quenched when vomiting occurred, but this effect on excitement was only temporary in some. Eight patients in all had decided gastric disturbance, to the extent of emesis, etc. The doses producing this result and the point of time in the treatment at which it occurred, are appended.

In most of the patients, however, not the slightest disorder of digestion occurred, and although one or two lost weight while under the treatment, several, on the other hand, gained considerably.

Symptoms of great excitement.	Dose of tincture of digitalis causing decided gastric disorder.	Point of time when digitalis caused decided gastric disorder.
Exacerbational.....	℥ xl three times a day.	After 3 days' treatment.
Subcontinuous	℥ xlv twice a day.	" 4 " "
Subcontinuous	℥ xxx three times a day.	" 11 " "
Paroxysmal	℥ xxx " "	" 2 " "
Paroxysmal	℥ xxx " "	" 7 " "
Subcontinuous	℥ xxx " "	" 74 " "
Subcontinuous	℥ xxx " "	" 28 " "
Paroxysmal	℥ xxx " "	" 16 " "

The cases have been tabulated, so as to show in each, the sex, age, form and duration of insanity; general character of the symptoms treated; the number of separate occasions on which treatment was adopted, and the length of each; the doses administered, and effect produced. In giving the duration of insanity, of course it is not implied that the particular form of it mentioned had existed throughout. Many had suffered from other, and different, mental symptoms at earlier periods of their insane history.

Digitalis is undoubtedly a powerful medicine, and in these cases it was preferred not to push the treatment; and, indeed, large or increasing doses were carefully avoided. No matter how violent their frenzy, it was never deemed judicious to give to the maniacs under care the heroic doses again and again recorded as having been given in delirium tremens, and by which many epileptics were tortured a generation ago.

Comparatively small doses were found to exert an effect different from that of larger ones, and to produce, or tend to, a calmative and tonic influence on both cerebral and cardiac agitation. It is believed this is conformable with the view now usually entertained as to the different effects of small and of large amounts of digitalis.

Any unpleasant gastric symptom in the above cases was interpreted as a sign that beneficial effect was being replaced by detrimental action, and that total or partial omission of the treatment was authorised. Any marked alteration of cardiac rhythm or sounds, supervening while digitalis was being taken, was felt to justify immediate cessation of its use. Cardiac contra-indications were, however, extremely rare.

Particulars of some Cases of Chronic Mania, Treated by Digitalis.

Sex.	Age.	Duration of Insanity.	General Character of Symptoms Treated by Digitalis.	Separate periods of Treatment by Digitalis.	Length of each period.	Doses of Tincture of Digitalis, B. P.	Degree of Benefit resulting from Treatment.
Male	34	9 years	Paroxysmal excitement: noisy: impulsive: extravagant delusions	1	5 weeks	ʒʒ xxx., 3 times a day	Moderate Decided
Male	32	4 years	Ditto ditto ditto	2	2 weeks	"	"
"	"	"	Paroxysmal excitement: noisy and impulsive, marked hallucinations	1	10 weeks	"	"
"	"	"	Ditto ditto ditto	2	25 days	"	"
"	"	"	Ditto ditto ditto	3	11 days	"	"
"	"	"	Ditto ditto ditto	4	20 days	"	"
Male	37	10 years	Ditto ditto ditto	5	13 days	"	"
Male	30	2 years	Paroxysmal excitement: noisy: irrational: hallucinations, and delusions	1	9 weeks	"	"
Male	22	6 months	Paroxysmal excitement: noisy: threatening: extravagant delusions	1	9 weeks	"	"
Female	63	18 months	Ditto ditto ditto	2	6 weeks	"	"
Female	41	9 months	Paroxysmal excitement: noisy: restless: abusive, &c.	1	26 days	"	"
"	"	11 months	Ditto ditto ditto	2	1 week, then P.R.N. for 3 months.	"	"
"	"	13 months	Ditto ditto ditto	1	12 days	"	"
Female	24	4½ years	Paroxysmal excitement: noisy: restlessness: mischievous, &c.	2	12 days	"	"
"	"	"	Paroxysmal excitement: loud singing: very restless, &c.	3	4 days	"	"
"	"	"	Ditto ditto ditto	1	8 days	ʒʒ xxx. to xlv., twice or three times a day	Decided
Male	23	2 years	Ditto ditto ditto	2	18 days	"	"
Male	20	1 year	Ditto ditto ditto	3	10 days, then occasionally P.R.N.	"	"
Male	28	16 months	Paroxysmal excitement: noisy: impulsive, &c.	1	4 weeks	ʒʒ xxx., 3 times a day	Moderate
"	"	18 months	Paroxysmal excitement: mischievous: insubordinate: destructive, &c.	1	27 days	"	"
"	"	20 months	Exacerbations of fury and violence: hallucinations, &c.	1	10 days	"	"
"	"	11 years	Ditto ditto ditto	2	4 weeks	"	"
Male	41	11 years	Ditto ditto ditto	3	17 days	"	"
Male	41	11 years	Paroxysmal excitement: noisy: threatening: mischievous	1	12 days	"	"

Particulars of some Cases of Chronic Mania, Treated by Digitalis—(continued).

Sex.	Age.	Duration of Insanity.	General Character of Symptoms Treated by Digitalis.	Separate periods of Treatment by Digitalis.	Length of each period.	Doses of Tincture by Digitalis, B. P.	Degree of Benefit resulting from Treatment.
Male	41	11 years	Paroxysmal excitement: noisy: threatening: mischievous	2	9 days	ʒj xxx, 3 times a day	Moderate
Male	30	6 years	Paroxysmal excitement: noisy: threatening: foul language	1	13 days	"	"
Male	22	8 months	Paroxysmal excitement: impulsive: violent: absurd delusions	1	3 weeks	"	Doubtful
Male	39	3 years	Paroxysmal excitement: noisy: incoherent, &c.	1	16 days	"	Doubtful or slight
Male	25	3 years	Ditto	2	6 days	"	"
Female	35	2 years	Paroxysmal homicidal impulse under hallucinations &c.	1	5 days	"	"
Male	50	18 years	Paroxysmal excitement: noisy: loquacious: irritable, &c.	1	3 days	"	"
Female	48	16 months	Excacerbations of emotional excitement	1	5 days	ʒj xxx, 4 times a day	"
Male	24	6 to 15 mos.	Subcontinuous excitement: noisy: insubordinate, with exalted delusions	1	20 days	ʒj xv, every 4 hours	"
"	"	"	Ditto	2	70 days	ʒj xxx, 3 times a day	Decided
"	"	"	Ditto	3	17 days	"	Moderate
"	"	"	Ditto	4	14 days	"	Decided
Male	29	3 years	Subcontinuous excitement: noisy: quarrelsome, &c.	1	17 days	"	Moderate
Male	35	6 years	Subcontinuous excitement: noisy: irritable: violent, &c.	1	28 days	ʒj xxv, 3 times a day	"
Male	39	5 to 6 years	Constant impulsive attempts to escape: irritable: occasionally violent	1	74 days	ʒj xxv, 3 times a day	"
"	"	"	Ditto	1	11 days	ʒj xl, 3 times a day	"
Male	29	16 months	Subcontinuous excitement: full of delusions and complaints of being poisoned, &c.	2	18 days	ʒj xxx, 3 times a day	"
Female	56	14 months	Continuous excitement: noisy: restless: excessively mischievous	3	17 days	"	"
			CHRONIC MELANCHOLIA AND DEMENTIA.	1	18 days	"	"
				1	8 days	ʒi, twice a day	None
Female	49	11 months	Melancholia, with exacerbations of great anguish and agitation	1	7 days	ʒj xl (later xx.) 3 times a day	Moderate

Female	47	9 months	Melancholia, with continual augmented agitation and irritability.....	1	11 days	mp xxx., 3 times a day	Decided
Male	21	10 months	Dementia, with exacerbations of destructive impulse and excitement.....	1	88 days	mp xxv., 3 times a day	Moderate
Male	31	6 years	Dementia, with paroxysmal excitement ditto.....	2	14 days	"	Doubtful
Male	36	12 years	Dementia, with destructive impulse, &c.....	1	31 days	"	"
"	"	"	Ditto ditto.....	2	80 days	"	"
"	"	"	Ditto ditto.....	3	6 days	"	"
GENERAL PARALYSIS.							
Female	27	5 months	Paroxysmal outbursts of noisy and destructive excitement.....	1	2 days	mp xxx., 3 times a day	Decided
"	40	6 months	Ditto ditto.....	2	3 days	mp xlv. (later xxx.),	"
"	40	2 years	Great restlessness in 2nd stage, approaching 3rd.....	1	17 days	3 times a day	Moderate
Male	56	2 months	Continual maniacal excitement : incessantly jabbering	1	14 days	mp xi., every 3 hours	"
Male	88	6 months	Chronic excitement, with exacerbations.....	1	12 days	mp xxx., 3 times a day	Doubtful
Male	88	7 months	Excitement from exalted delusions, in 1st stage.....	1	5 days	"	"
ACUTE MANIA.							
Female	25	1 month	Noisy : restless : incoherent : sleepless, &c.....	1	28 days	mp xxx., 3 times a day	Moderate
Male	33	5 days	Noisy : restless : violent, &c.....	1	8 days	"	"
"	33	1 month	Ditto ditto.....	2	11 days	"	Decided
Male	28	1 month	Subacute : noisy : restless : dirty : mischievous : absurd delusions.....	1	28 days	"	Moderate
"	28	7 days	Subacute : great restlessness : noisy : incoherent jabbering, &c.....	1	7 days	"	Doubtful
"	28	21 days	Ditto ditto.....	2	7 days	mp xi., 3 times a day	Moderate
Male	28	5 days	Maniacal fury, with desperately violent acts.....	1	10 days	mp xi., 3 times a day	Doubtful
Male	46	2½ months	Excited : restless : emotional agitation : sleepless, &c.....	1	29 days	K. Br. and Hyos, H.S.S.	Moderate