A T H E S I S

for

The Degree of Doctor of Medicine,

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on

The Comparative Merits of Stramonium, Belladonna, Genoscopolamine, and Hyoscine, in the Treatment of Post-Encephalitic Parkinsonism.

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INTRODUCTION.

The following thesis is based on a series of researches carried out by the author at the London County Mental Hospital, West Park, Epsom, on the drug treatment of the post-encephalitic Parkinsonian state, in a series of 65 cases.

The remedies employed were directed towards the control, and relief, of those distressing manifestations, which follow an attack of encephalitis lethargica, and which form the Parkinsonian syndrome.

The object of this thesis is to draw a comparison between the following drugs:- hyoscine hydrobromide, tincture of stramonium, tincture of belladonna, and genoscopolamine hydrobromate, in their effect on the various manifestations of post-encaphalitic Parkinsonism.

It was the aim of the author to find not only the most generally efficacious of the four drugs, but also the drug that was most effective in the relief of any one of the many manifestations e.g. rigidity, tremor, sialorrhoea, etc.

Until the commencement of these researches in January 1929, hypodermic injections of hyoscine hydrobromide had been generally employed in the treatment of the cases of post-encephalitic Parkinsonism at West Park Mental Hospital, and had hitherto appeared to be the most satisfactory form of therapy. This treatment had, however, several grave disadvantages. The daily

injections necessarily produced a certain amount of distress owing to the frequent insertion of the hypodermic needle, but many of the patients found themselves quite unable to do without them. Several patients on prolonged treatment with hyoscine injections were in an unsatisfactory physical, and mental state. Although they did not exhibit any definite physical signs, beyond some loss of weight, they had a slightly toxic appearance; and mentally they were apathetic and mildly depressed. A few cases showed marked depression. A further disadvantage was that the patients undergoing injections were seldom satisfied with their dose, and were constantly clamouring to have it increased, or reduced, or to be put on some other drug.

The oral administration of hyoscine hydrobromide had been tried previously, and had proved unsatisfactory. Owing to the large hysterical element present in this condition, those cases treated with hyoscine by the mouth, in a ward where others were receiving hyoscine injections, nursed a sense of grievance, and made constant demands to be promoted to the ranks of those undergoing the more spectacular form of therapy. To estimate the efficacy of the oral method under these circumstances, therefore, placed the observer at a disadvantage.

It was thought that if all patients were on the same drug at the same time, a truer estimate of the efficacy of each could be obtained, and the results compared.

Carmichael and Green (13), working at St. Bartholomew's Hospital, London, had reported improvement in their patients on large doses of tincture of stramonium, and it was decided to test this drug on the West Park cases, and to compare the results with those obtained from the oral administration of hyoscine hydrobromide, tincture of belladonna, and genoscopolamine hydrobromate. Accordingly, the hypodermic method was abandoned, and the hope cherished that it would not be found necessary to return to it. This hope, as will be shown later, was fully justified.

Previous and Concurrent Literature.

(a) On Hyoscine.

In 1906 Erb (1) using hyoscine in the treatment of idiopathic paralysis agitans, recorded benefit in the rigidity and tremor of that condition.

Later in 1921 Babinski and Souques (2) found hyoscine to be of benefit in the treatment of the sequelae of encephalitis lethargica. Hyslop (3), who followed with a paper in 1922, recorded the lessening of post-encephalitic Parkinsonian rigidity in 6 out of 8 cases by the administration of hyoscine.

The same year Kennedy, Davis & Hyslop (4) in a series of cases mentioned similar results.

In 1924 Hohman (5) published his results of hyoscine treatment, and produced improvement in eighteen cases, seven of which showed much mental improvement.

Delmas-Marsalet (6) the following year using a graphic method demonstrated the diminution in rigidity which followed about 45 minutes after the injection of hyoscine hydrobromide.

In 1926 McCowan, Harris & Mann (7), working at West Park Mental Hospital, and the Maudsley Hospital, demonstrated the effect of hyoscine on the blood sugar curve which was made to approximate to the normal type. They considered hyoscine to be of undoubted value in the treatment of post-encephalitic Parkinsonism, and pointed out that, although many cases benefited by its oral administration, the full benefit could only be obtained by hypodermic injection. They held that no tolerance or deleterious effects resulted from the prolonged use of the drug, and they showed that its action was only temporary. They thought that the hysterical element in this disease was probably due to a lesion of the basal ganglia, and suggested that an analogous lesion might account for similar symptoms in hysteria, chorea etc. They held that suggestion might be a subsidiary factor

in the improvement attributed to hyoscine.

Ross (8) writing in the same year, argued that the improvement was due to the direct effect of the hyoscine, and not to suggestion.

Hurst (9), in a letter written at the same time, suggested the addition of pilocarpine nitrate in combating the toxic effects of hyoscine, namely, blurred vision, and dryness of the mouth. By this means he was able to exhibit a dose of gr. $\frac{1}{8}$ by the mouth without causing toxic symptoms.

In 1927 the work of Delmas-Marsalet was confirmed by Cruchet (10).

The same year Hall (11), who recorded the rapidity of movement in a large number of cases, demonstrated an increase in the rapidity of movement following hyoscine therapy.

Harris (12) in 1927 working at West Park Mental Hospital, Epsom, and the Maudsley Hospital, on tracings of the knee-jerk in post-encephalitic Parkinsonism, both with and without hyoscine treatment, concluded that hyoscine lessened rigidity.

The work of Carmichael and Green (13) in 1928 drew a comparison between hyoscine and tincture of stramonium. The latter, when given in large doses, they considered at least as efficient as subcutaneous hyoscine, and better than hyoscine by the mouth.

Hengstler and Ruhberg (14) in 1930 found that hyoscine in small doses was of use in cases of post-

encephalitic Parkinsonism where there is marked tremor.

Thompson (15) in the same year came to the conclusion that hyoscine was almost a specific in controlling muscle rigidity, and tremors in cases of post-encephalitic Parkinsonism, but does not produce any marked mental alleviation.

(b) On Stramonium.

In 1925 Juster (16) published his results on the effect of stramonium in abolishing Parkinsonian rigidity. He recommended the use of datura stramonium as the "daily bread" of Parkinsonian patients.

In 1926 Laignal-Levastine and Valence (17) reported the results of using powdered datura stramonium in the form of pills, in the treatment of post-encephalitic Parkinsonism. They commenced with a dose of 0·1 gram three times a day, and increased this gradually until a maximum dose of 1 gram was being taken per day. They noted a diminution, or abolition, of rigidity and tremor, bradykinesia, and excessive salivation. The mental improvement in their patients was considerable, those who had been depressed and self-absorbed became alert and cheerful. To minimise the toxic symptoms of dryness of the mouth and blurred vision, they gave their patients alternate weeks with and without treatment.

Harris (12), in 1927, reported his results with tincture of stramonium as disappointing. He used

doses of 25 minims thrice daily.

Carmichael and Green (13) in 1928 published their results on the effect of stramonium, and hyoscine, and other alkaloids, namely atropine, and laevo- and dextro-rotatory hyoscyamine, in diminishing Parkinsonian rigidity. Their studies were both clinical and instrumental. They found that stramonium by the mouth had a more beneficial effect upon the ergograph tracings than hyoscine, either by the mouth or subcutaneously. As regards their clinical observations, they found that both hyoscine and stramonium had a considerably less beneficial effect on three elderly patients, suffering from idiopathic paralysis agitans, than on seventeen younger post-encephalitic cases. The two oldest of their patients with paralysis agitans were unable to tolerate even 25 minims of tincture of stramonium by the mouth, and the benefit obtained by giving smaller doses of this drug was practically negligible. With the other cases very large doses of stramonium were well tolerated, and all the cases showed some benefit. They concluded that tincture of stramonium in large doses lessened the Parkinsonian rigidity, and increased the ability to perform fine muscular movements as graphically recorded. It appeared to improve the mental condition of the patient, and they found that it was at least as efficient as subcutaneous hyoscine in large doses, and better than hyoscine by the mouth. It could also

be given continuously over a long period of time. The optimum dose they stated, though varying in individual cases, commonly lay between 45 and 60 minims three times a day. The tremor they concluded was unaffected. They found that the toxic symptoms of blurred vision, dryness of the mouth, nausea and vomiting, were rarely severe, and were to a large extent amenable to treatment. They stated that the action of stramonium was palliative and not curative, and that the whole tincture was more efficacious than atropine, or laevo- and dextro-rotatory hyoscyamine. In their work with stramonium they used the B.P. tincture, whereas the American workers used the tincture of the U.S.P.

In the same year Shapiro (18) in America, using a modification of Juster's method, administered datura stramonium to a series of 23 cases, 16 of which showed post-encephalitic Parkinsonism, and 7 classical paralysis agitans. She gave 1 grain by the mouth three times a day, and increased the dose gradually until 14 to 16 grains were being given per day. As soon as she obtained optimal results she decreased the dose gradually until 7 to 8 grains were reached. She allowed one day of intermission after five to six days of medication. She noticed excellent results in 14 cases; of these 11 were suffering from post-encephalitic Parkinsonism, and 3 from paralysis agitans. The remaining 9 cases showed slow improve-

ment. The benefit took place in the manifestations muscular rigidity, excessive salivation, speech, and mental condition. She concluded that datura stramonium in the form of dry leaves is the most valuable palliative remedy in Parkinsonian states. Datura stramonium, she stated, may be prescribed in daily doses as high as 1 to 2 grams, but given in small doses every one to two hours. She found that almost all the symptoms were improved simultaneously. Aged cases with bad arterio-sclerosis and severe tremor only improved slightly.

Baird (19) in 1929 reported the use of datura stramonium in 4 cases in combination with general therapeutic methods. All the cases were noticeably improved.

The same year Jacobson and Epplen (20), using tincture of stramonium, found it an excellent palliative drug for all manifestations of post-encephalitic Parkinsonism, with the exception of paresis.

In a subsequent paper in 1930 (21) they confirmed their previous results, and recommended the use of fresh preparations, and very large doses. Toxic manifestations, they concluded, were rare and seemingly evanescent, but they pointed out that caution was necessary in substituting belladonna for stramonium. They suggested that there were probably unknown alkaloids present in stramonium.

Hoedemaker and Burns (22) in 1930, working in America, concluded that tincture of stramonium in large doses lessened Parkinsonian rigidity, and increased the ability to perform fine rapid movements, but they considered that, with the exception of a few cases, tremor was not noticeably affected. They also stated that the mental condition of the patient appeared to be improved by the drug. They recommended a dose of from 60 to 90 minims three times a day. The toxic effects they found were rarely severe, and could be combated by suitable treatment. They also pointed out that tincture of stramonium had practically no effect in definite cases of paralysis agitans, and that there were some cases of post-encephalitic Parkinsonism that it did not affect. They emphasised that tincture of stramonium, though only a palliative drug, should be used more extensively in the treatment of post-encephalitic Parkinsonism.

In June 1930 Worster-Drought and Hill (23) published a paper on the treatment of post-encephalitic Parkinsonism with dried preparations of stramonium. They recommended the use of dried extract of stramonium (extractum stramonii U.S.P.) by the mouth in doses of 0·25 grams to 1 gram, or more, three times a day, the average dose being 0·75 grams. They stated, however, that similar results could be obtained by doses, containing equivalent

quantities of alkaloid, of dried extract of stramonium (extractum stramonii exsiccatum B.P.C.), dried stramonium leaves, and tincture of stramonium B.P. The disadvantage of the leaves, they pointed out, is the excessive bulk, and of the tincture that it is twice as expensive as the extract. They concluded that all these preparations of stramonium gave as satisfactory results as those obtained from the hypodermic injection of hyoscine. No signs of intolerance were observed on tincture of stramonium after two years treatment. Eighty cases were treated with extractum stramonii U.S.P., and were quite as well as they had been on hyoscine hypodermically, and in many instances were even better. They pointed out that the improvement was present in all features of the syndrome, that the greater the severity of the syndrome the greater the tolerance, and that muscular rigidity was the manifestation most relieved, and in many cases totally abolished. Sialorrhoea, and greasiness of the skin also disappeared. Bradykinesia and bradyphrenia were much improved, and tremor, though not abolished, was mitigated. Speech was more fluent, and comparatively easy. The extreme flexion of the limbs, trunk, and neck, was considerably diminished in most of the patients, and standing and walking were not only possible, but almost normal in many cases. In cases of idiopathic paralysis agitans

they found the relief of symptoms, and especially of tremor, to be considerably less than in cases of post-encephalitic Parkinsonism. No deleterious effects from the prolonged use of stramonium, or of any of the atropine group of alkaloids were observed, and there was no cumulative action.

Wiersma (24), in 1930, also recommended the use of stramonium in Parkinsonian manifestations, and stated that it was to be preferred to other drugs.

Menard and Hurxthal (25) writing in 1931 conclude that datura stramonium in adequate dosage is useful in alleviating some of the manifestations of paralysis agitans, and post-encephalitic Parkinsonism.

Steen (26) in 1931 reported on 16 Parkinsonian and 4 choreoathetoid cases, all of encephalitic origin, treated with tincture of stramonium. No beneficial effect was noticed in the four choreoathetoid cases, two of which seemed to be made worse. The 16 Parkinsonian cases were improved, especially in the manifestation muscular rigidity. She commenced giving 20 minims t.i.d. increasing the dose daily by 1 minim. She found that the lowest dose tolerated was 35 minims t.i.d., and the highest dose 110 minims t.i.d. The average dose tolerated was between 75 and 85 minims t.i.d. She found that in the children and young adults treated, the average tolerance of stramonium was high, and the

drug caused no serious or lasting toxic effects. In the Parkinsonian cases the drugs seemed to slow the rate of increase of disability, but did not in any case arrest the progress of disease.

(c) On Belladonna.

Hyslop (3) in 1922 failed to find improvement in his cases of post-encephalitic Parkinsonism after the administration of tincture of belladonna in 30 minim doses. The same applied to his trial of gr. $\frac{1}{100}$ of atropine sulphate.

Hall (27) writing in 1926 stated that the oral administration of tincture of belladonna in doses of 30 minims t.i.d. relieved the hypertonia, and allowed the muscles to be used with less effort. He found belladonna somewhat disappointing at first when given in small doses, in checking troublesome sialorrhoea, but the results were better when doses of 10, 20 or 30 minims were given t.i.d.

Hengstler and Ruhberg (14) in 1930 found that belladonna was of benefit in controlling sialorrhoea. They often reached doses of 30 minims t.i.d.

(d) On Genoscopolamine.

Polonovski, Combemale and Nayrac (28), writing in 1926, recommended the use of genoscopolamine hydrobromate in cases of post-encephalitic Parkinsonism, and of paralysis agitans. They noticed improvement in the rigidity and tremor of their patients, and the sialorrhoea was also benefited. Genoscopolamine appeared to be much less toxic in its effects than hyoscine.

METHOD OF INVESTIGATION.

The investigations were carried out on 65 patients, of whom 45 received a course of hyoscine hydrobromide, tincture of stramonium, tincture of belladonna and genoscopolamine hydrobromate. The remaining 20 received tincture of stramonium and tincture of belladonna only.

The patients were of both sexes. In the series of 45 cases 30 were males, and 15 were females.

In the larger series of 65 cases (including the series of 45), the males numbered 41 and the females 24. One case of idiopathic paralysis agitans (Case 11 aged 61) was included in the series of 45 cases. All the other patients i.e. 64, were suffering from the sequelae of encephalitis lethargica.

The cases showed all, or several, of the manifestations of the Parkinsonian syndrome and these were present in varying degrees of severity. The patients' ages varied from 16 to 52, but those of a large proportion fell between 20 and 26.

All these 65 patients were certified under the Lunacy Act.

As regards their mental condition, most of them exhibited the typical, childish, sympathy-craving, emotional disposition. Many showed affective disturbance and were depressed, whereas others were merely dull, and apathetic.

Some of the patients were fairly cheerful, and the majority were hopeful of their ultimate recovery, and took a considerable interest in their treatment.

A large proportion showed some disorder of conduct, and from time to time were mischievous and quarrelsome.

On the physical side all degrees of Parkinsonian rigidity were present, and the mask-like face was seen in nearly all of the cases. Various degrees of tremor were manifested, as were also different degrees of bradykinesia.

The flexed attitude, and the typical abnormalities of gait such as retropulsion, festinant gait, and inability to swing the arms on walking were present to some extent in practically all of the patients.

Most cases showed some degree of excessive salivation, often with drooling of saliva.

About one third of the patients exhibited oculogyric crises.

Almost without exception, the slow, monotonous speech was to some extent present.

Their ability to work in the wards, or in the workshops, depended principally on their physical state, but the mental factor had a large influence.

The effect of each of the four drugs was studied separately, and they were used in the following order: 1. Hyoscine hydrobromide. 2. Tincture of stramonium. 3. Tincture of belladonna. 4. Genoscopolamine hydrobromate.

The treatment with the first three drugs extended from January until August 1929, but that with genoscopolamine was commenced in December 1929, and completed in March 1930.

Throughout the whole scheme of investigation, each drug was given three times a day, and no departure from this rule was made.

The patients were put on a small dose of the drug under investigation. This they took for about a fortnight, during which time their mental and physical state was carefully recorded. The dose was then increased, and maintained at the same level, during the ensuing fortnight, when their condition was again noted in detail. This process was repeated until a dose was reached, beyond which it would have been unsafe to venture. This maximum dose was indicated by the onset of mild toxic symptoms. The scale was then descended more rapidly, and without making a detailed record of the patients' condition. From the lowest dose the patients were changed over to the minimum dose of the next drug to be investigated, and the process repeated.

The patients were examined at approximately the same time each day, and at least two hours were allowed to elapse between the administration of a dose, and the examination. They were not examined until they had been on each dose for at least five days, but they were seen each day throughout the

treatment by the author, and their general appearance, condition, and temper noted.

At the individual examination of each patient, in addition to a physical and mental examination by the author, a report on the patient was taken from the charge nurse, who had opportunities of observation in the absence of the doctor.

After the administration of hyoscine hydrobromide the patients were given a period of a week without any drug treatment whatever, and at the end of the week, they were again examined, and their condition recorded. It was not possible to repeat this period without drugs, at a later date, owing to the distress which it caused to the patients.

After the week without drug treatment, tincture of stramonium was administered in increasing doses according to the method given above.

Tincture of stramonium was followed by a course of tincture of belladonna given on the same lines.

Genoscopolamine hydrobromate was administered under somewhat different conditions, as the author by that time had taken up another appointment, and was resident in a hospital elsewhere. He had therefore to pay visits to West Park Mental Hospital at intervals in order to complete the treatment.

The method of giving genoscopolamine was as follows:- From September 1929 until March 1930 all the patients were put on tincture of stramonium m.60 t.i.d.

The author gave notice of each of his visits two days beforehand. On the evening of the last day but one before his visit the patients were given their last dose of stramonium. During the following day they were given genoscopolamine pills three times a day. (The minimum dose for the first examination on the author's first visit being 1 pill t.i.d.) The next day the author paid his visit, and examined the cases who were kept on genoscopolamine during that day. The day following the visit they were put back on tincture of stramonium m.60 t.i.d. until such time as the author was able to pay his next visit, when a higher dose of genoscopolamine was tried by the same method.

Not more than a third of the 45 cases could be examined on any one day. This necessitated treating the patients in sections, the remainder being kept on tincture of stramonium m.60 t.i.d. until their turn came to receive genoscopolamine.

The expense of having a large number of patients on genoscopolamine prevented the giving of the drug for a longer period prior to examination. It was found, however, that neither stramonium or genoscopolamine, nor for that matter belladonna or hyoscine were cumulative in their action, and that the effect wore off almost immediately on withholding a dose. As far as the physical condition of the patients was concerned, therefore, the giving of genoscopolamine for this short period prior to

examination, did not interfere with the readings. On the other hand it was more difficult to estimate the mental state, but any change from their condition on 60 minims of stramonium was carefully noted, and an opinion formed of the presence or absence of depression, and its degree of profundity on each dose of genoscopolamine.

The same method of examining the patients individually was used for all the drugs. On each dose the following points were noted:- the degree of muscular rigidity, and of bradykinesia, the attitude of the patient, and the peculiarities and type of gait, also the extent of the tremor, and the ability to work. The presence of excessive salivation, and drooling of saliva were also noted. The mask-like face, the monotonous speech, and the frequency of oculo-gyric crises were also observed. Attention was paid to the mental state with special reference to depression. The behaviour of the patients, and any special propensities, such as extreme childishness, or emotional facility, were also noted.

The onset of toxic manifestations, such as confusion, giddiness, gastro-intestinal symptoms, or tachycardia, was watched for. The mouth often became dry on higher doses of the drugs, and the vision was frequently somewhat blurred, therefore when this occurred it was carefully recorded.

Notes were made in every case under the above headings at each examination, a complete record of the condition of the patient on each dose of the drug under investigation was thus obtained.

For example, if rigidity had been marked without drugs, and if on tincture of stramonium m.60 it became moderate, and on m.120 very slight, the fact was recorded, together with the doses producing the change.

For purposes of comparison five degrees of muscular rigidity were recognised, namely, very marked, marked, moderate, slight, and very slight. The term "very marked rigidity" was applied to a degree of hypertonus in which the limbs were almost immovable, and the other terms were applied to lesser degrees down to "very slight rigidity", which nearly approached normal muscle tonus. As far as possible these terms were also used in describing the extent of tremor, the degree of bradykinesia, of sialorrhoea, of dryness of the mouth, of blurred vision, and of depression. No absolute value was attached to these terms, that is to say they had meaning for the author only, and were found useful by him as relative terms for expressing comparisons.

In examining for muscular rigidity each limb was tested separately.

The degree of bradykinesia was estimated by asking the patient rapidly to raise his hands above his head and lower them.

Gait was always described more fully as it did not admit of a brief description, and was based on observing the patient walk. Retropulsion was tested for.

The doses of the drugs used were as follows:-

Hyoscine Hydrobromide.

gr. $\frac{1}{150}$, $\frac{1}{100}$, $\frac{1}{75}$, $\frac{1}{50}$, $\frac{1}{25}$

Tincture of Stramonium.

m. 20, 40, 60, 90, 120, 150.

Tincture of Belladonna.

m. 20, 30, 40, 50, 60, 70.

Genoscopolamine Hydrobromate.

Pills 1, 2, 3, 4.

(Each pill contains $\frac{1}{2}$ milligram of genoscopolamine hydrobromate making the dose in milligrams $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2.)

All of the above doses were given three times a day.

All the cases were raised to the maximum doses given in the above table with the following exceptions:-

On hyoscine.

Out of a total of 45 cases (30 males and 15 females), one male case was not advanced beyond gr. $\frac{1}{75}$ t.i.d. owing to mild confusion. Two male cases, who were advanced to gr. $\frac{1}{25}$ t.i.d., showed quite well-marked

confusion and giddiness on that dose, and had to be immediately reduced to the lower dose of gr. $\frac{1}{50}$ t.i.d.

On stramonium.

Out of a total of 65 cases (41 males and 24 females), three male cases (including one case of idiopathic paralysis agitans) and three female cases were not advanced beyond minims 120 t.i.d. Four male cases and one female case were not advanced beyond minims 90 t.i.d.

Two males cases were not advanced beyond minims 60 t.i.d.

All the above showed mild confusion and sometimes slight giddiness on the doses mentioned, and were therefore not advanced further.

One male case, on being increased to minims 90 t.i.d., showed quite well-marked confusion and giddiness on that dose, and had to be immediately reduced to the lower dose of minims 60 t.i.d.

Hyoscine hydrobromide crystals of the B.P. were used, and were made up in aqueous solution for administration. (The maximum B.P. dose by the mouth is gr. $\frac{1}{100}$).

Tincture of stramonium (B.P.), according to Cushny, Martindale, and other authorities, is made from the leaves of the plant Datura Stramonium, and contains daturine, which is identical with hyoscyamine, together with hyoscyamine and hyoscine. These are extracted from the leaves by means of

alcohol, and are present in the tincture in the proportion of 1 part of leaves to 5 parts of 45% alcohol. Unfortunately this tincture is not standardised to contain a definite amount of total alkaloids, but an assurance was obtained from the British Drug Houses that during these experiments the tincture they supplied would be made from the same parcel of leaves. (The maximum B.P. dose is m.15).

Tincture of belladonna (B.P.) is made from the dried leaf of the plant Atropa Belladonna, which yields the alkaloids hyoscyamine, and atropine. (0.2 to 0·7%) but principally hyoscyamine. It is prepared from 1 part of leaves to 10 parts of 70% alcohol, and standardised to contain 0·035% alkaloid. (The maximum B.P. dose is m.15).

Genoscopolamine, which is said to be the Nitrogen-oxide of scopolamine, is made up in the form of pills of $\frac{1}{2}$ milligram each of genoscopolamine hydrobromate. The study of the chemical composition of this latter product was undertaken by Drs. Max and Michel Polonovski (29), who reported their results to the Académie des Sciences in June 1925.

It is said to have the formula $C_{17}H_{21}O_5NHBr$.

RESULTS OF TREATMENT.

When the efficacy of the four drugs came to be compared, it was found that they fell into two groups, namely, tincture of stramonium and tincture of belladonna on the one hand, and hyoscine hydrobromide and genoscopolamine pills on the other.

The drugs of the first group (tincture of stramonium and tincture of belladonna) were markedly more beneficial in their action than those of the second group (hyoscine hydrobromide and genoscopolamine).

In the first group tincture of stramonium was found to be of greater efficacy.

The effects produced by the drugs of the second group were in general nearly equal, but nevertheless they varied somewhat according to the particular manifestation of the post-encephalitic state under review. For example, in the manifestation muscular rigidity, genoscopolamine was slightly more efficacious than hyoscine hydrobromide, whereas the reverse was the case when the manifestation under review was the mental state with special reference to depression.

The general order of efficacy of the drugs was therefore:-

1. Tincture of stramonium. 2. Tincture of belladonna. 3. Genoscopolamine or hyoscine hydrobromide according to the manifestation under consideration.

For the sake of uniformity, and so that comparisons could be easily drawn, the cases that received all four drugs were grouped together as series A. These numbered 45 (30 males and 15 females).

This same 45 cases helped to make up series B, which contained an additional 20 cases (11 males and 9 females) who received a course of tincture of stramonium, and tincture of belladonna only. The total number of cases in series B was therefore 65. (41 males 24 females).

The reason for series B being larger, was that it contained all the cases who were admitted to the hospital after the work on hyoscine hydrobromide had commenced, also those who were freed from other lines of investigation in time to be put on tincture of stramonium, and later tincture of belladonna. This series also contained those who were discharged, or transferred to other institutions, after they had completed their course of tincture of stramonium, and tincture of belladonna, but before they could be given genoscopolamine. Thus there was a larger number of cases available to receive tincture of stramonium and tincture of belladonna, and a lesser number (included in the larger number) to receive all four drugs.

In the following paragraphs the various manifestations of post-encephalitic Parkinsonism are

taken separately, and an account given of the comparative merits of each of the four drugs used in the treatment of these manifestations.

When dosage is under review the results are taken from series A of 45 cases.

Muscular Rigidity.

Of all the post-encephalitic Parkinsonian manifestations, muscular rigidity showed the greatest response to treatment.

Out of 65 cases treated in series B, 61 showed lessened rigidity; only one case did not show any improvement on stramonium or belladonna, the remaining 3 being without rigidity.

In their effect on rigidity the drugs fell into the two groups mentioned above, namely:-

1. Tincture of stramonium and tincture of belladonna.
2. Genoscopolamine and hyoscine hydrobromide.

The drugs of the first group were much more efficacious than those of the second. In the first group (stramonium and belladonna) greater improvement was obtained with stramonium.

The following table gives the comparison between stramonium and belladonna in series A of 45 cases.

3 cases did not manifest rigidity with or without drugs.

0 " remained unbenefited by stramonium or belladonna.

26 " were benefited equally by both drugs.

5 cases were benefited more by belladonna.

11 " " " " " stramonium.

Also in the larger series B of 65 cases.

3 cases did not manifest rigidity with or without drugs.

1 " remained unbenefited by stramonium or belladonna.

35 " were benefited equally by both drugs.

6 " " " more by belladonna.

20 " " " " " stramonium.

The following table gives the comparison between genoscopolamine and hyoscine in series A of 45 cases.

3 cases did not manifest rigidity with or without drugs.

2 " remained unbenefited by genoscopolamine or hyoscine.

16 " were benefited equally by both drugs.

10 " " " more by hyoscine.

14 " " " " " genoscopolamine.

For muscular rigidity the efficacy of the drugs is therefore in the following order.

1. Stramonium.
2. Belladonna.
3. Genoscopolamine.
4. Hyoscine.

Reference to Appendix I. tables I. to VII. will clearly show those points (particularly tables I. V. and VII.).

Dosage for Muscular Rigidity.

Stramonium.

The optimum dose varied from m.20 to m.120 t.i.d. and was found most frequently to be m.60 and 90 t.i.d.

(No cases remained unimproved by stramonium).

Belladonna.

The optimum dose varied from m.20 to m.70 t.i.d. and was found most frequently to be m.50 t.i.d.

(1 case remained unimproved by belladonna).

Genoscopolamine.

The optimum dose varied from 1 to 4 pills t.i.d. and was found most frequently to be 4 pills t.i.d.

(4 cases were not improved by genoscopolamine).

Hyoscine.

The optimum dose varied from gr. $\frac{1}{150}$ to gr. $\frac{1}{25}$ t.i.d. and was found most frequently to be gr. $\frac{1}{25}$ t.i.d.

(7 cases were not improved by hyoscine).

Tremor.

In their effect on tremor the drugs fell into the same two groups mentioned above, but belladonna was found to be only slightly more efficacious than the drugs of the second group.

The following table gives the comparison between stramonium and belladonna in series A of 45 cases.

7 cases did not manifest tremor with or without drugs.

4 " remained unbenefited by stramonium or belladonna.

17 " were benefited equally by both drugs.

4 " " " more by belladonna.

13 " " " " " stramonium.

In series B of 65 cases.

11 cases did not manifest tremor with or without drugs.

5 " remained unbenefited by stramonium or belladonna.

22 " were benefited equally by both drugs.

7 " " " more by belladonna.

20 " " " " " stramonium.

The following table gives the comparison between genoscopolamine and hyoscine in series A of 45 cases.

7 cases did not manifest tremor with or without drugs.

6 " remained unbenefited by genoscopolamine or hyoscine.

13 " were benefited equally by both drugs.

9 " " " more by genoscopolamine.

10 " " " " " hyoscine.

Taking the second group of drugs (genoscopolamine and hyoscine) little difference was observed. They were almost equally efficacious.

For tremor the efficacy of the drugs is therefore in the following order:-

1. Stramonium.
2. Belladonna.
3. Hyoscine.
4. Genoscopolamine.

Dosage for Tremor.

Stramonium.

The optimum dose varied from m.20 to m.150 t.i.d. and was most frequently found to be m.90 t.i.d.

(6 cases were not benefited by stramonium).

Belladonna.

The optimum dose varied from m.20 to m.70 t.i.d. and was most frequently found to be m.20 and m.70 t.i.d.

(15 cases were not improved by belladonna).

Genoscopolamine.

The optimum dose varied from 1 to 4 pills t.i.d. and was most frequently found to be 1 and 4 pills t.i.d.

(13 cases were not improved by genoscopolamine).

Hyoscine.

The optimum dose varied from gr. $\frac{1}{150}$ to gr. $\frac{1}{25}$ t.i.d. and was most frequently found to be gr. $\frac{1}{150}$ and gr. $\frac{1}{25}$ t.i.d.

(11 cases were not improved by hyoscine).

Under belladonna, genoscopolamine, and hyoscine, a fairly large number of cases were not improved, but it was found that a greater proportion of patients,

than in the case of stramonium, showed benefit on the lowest dose.

Bradykinesia.

In their effect in diminishing bradykinesia the drugs fell into the same two groups mentioned above.

The following table gives the comparison between stramonium and belladonna in series A of 45 cases.

2 cases did not manifest bradykinesia with or without drugs.
8 " remained unbenefited by stramonium or belladonna.
20 " were benefited equally by both drugs.
2 " " " more by belladonna.
13 " " " " " stramonium.

In series B of 65 cases.

2 cases did not manifest bradykinesia with or without drugs.
10 " remained unbenefited by stramonium or belladonna.
37 " were benefited equally by both drugs.
2 " " " more by belladonna.
14 " " " " " stramonium.

The following table gives the comparison between genoscopolamine and hyoscine in series A of 45 cases.

2 cases did not manifest bradykinesia with or without drugs.
9 " remained unbenefited by genoscopolamine or hyoscine.

24 cases were benefited equally by both drugs.

5 " " " more by genoscopolamine.

5 " " " " " hyoscine.

For bradykinesia the efficacy of the drugs is in the following order.

1. Stramonium.
2. Belladonna.
3. Genoscopolamine and hyoscine equal.

Stramonium was again found to be much the superior drug.

Dosage for Bradykinesia.

Stramonium.

The optimum dose varied from m.40 to m.150 t.i.d. and was most frequently found to be m.40 t.i.d.

(9 cases were not improved by stramonium).

Belladonna.

The optimum dose varied from m.20 to m.70 t.i.d. and was most frequently found to be m.20 t.i.d.

(11 cases were not improved by belladonna).

Genoscopolamine.

The optimum dose varied from 1 to 4 pills t.i.d. and was most frequently found to be 1 pill t.i.d.

(17 cases were not improved by genoscopolamine).

Hyoscine.

The optimum dose varied from gr. $\frac{1}{150}$ to gr. $\frac{1}{25}$ t.i.d. and was most frequently found to be gr. $\frac{1}{150}$ t.i.d.

(14 cases were not improved by hyoscine).

In the case of bradykinesia lower doses of all the four drugs were required to produce the maximum improvement than in the case of rigidity and tremor.

Gait.

In their effect in improving the gait the drugs fell into the same two groups mentioned above.

The following table gives the comparison between stramonium and belladonna in series A of 45 cases.

1 case did not manifest any abnormality of gait with or without drugs.

3 cases remained unbenefited by stramonium or belladonna.

16 " were benefited equally by both drugs.

6 " " " more by belladonna.

19 " " " " " stramonium.

In series B of 65 cases

1 case did not manifest any abnormality of gait with or without drugs.

6 cases remained unbenefited by stramonium or belladonna.

23 " were benefited equally by both drugs.

6 " " " more by belladonna.

29 " " " " " stramonium.

The following table gives the comparison between genoscopolamine and hyoscine in series A of 45 cases.

1 case did not mainfest any abnormality of gait with or without drugs.

5 cases remained unbenefited by genoscopolamine or hyoscine.

13 cases were benefited equally by both drugs.

11 " " " more by hyoscine.

15 " " " " " genoscopolamine.

Genoscopolamine as shown above was found to be a little more efficacious than hyoscine.

For improving gait the efficacy of the drugs is in the following order:-

1. Stramonium.
2. Belladonna.
3. Genoscopolamine.
4. Hyoscine.

Dosage for Gait.

Stramonium.

The optimum dose varied from m.20 to m.150 t.i.d. and was most frequently found to be m.60 and m.120 t.i.d.

(4 cases were not improved by stramonium).

Belladonna.

The optimum dose varied from m.20 to m.70 t.i.d. and was most frequently found to be m.20 and m.60 t.i.d.

(5 cases were not improved by belladonna).

Genoscopolamine.

The optimum dose varied from 1 to 4 pills t.i.d. and was most frequently found to be 2 pills t.i.d.

(11 cases were not improved by genoscopolamine).

Hyoscine.

The optimum dose varied from gr. $\frac{1}{150}$ to gr. $\frac{1}{25}$ t.i.d. and was most frequently found to be gr. $\frac{1}{75}$ t.i.d.

(11 cases were not improved by hyoscine).

As will be seen from the above the middle doses were the most efficacious. There was less uniformity however in the distribution of the doses.

Ability to Work.

The ability to work was produced almost equally by all four drugs, but stramonium appeared to be of slightly greater value.

The following table gives the comparison between stramonium and belladonna in series A of 45 cases.

12 cases were able to work without drugs.
13 " remained unbenefited by stramonium or belladonna.
17 " were benefited equally (i.e. worked) by both drugs.
0 " were benefited more by belladonna.
3 " were benefited " by stramonium.

In series B of 65 cases.

16 cases were able to work without drugs.
20 " remained unbenefited by stramonium or belladonna.
25 " were benefited equally (i.e. worked) by both drugs.

0 cases were benefited more by belladonna.

4 " " " " " stramonium.

The following table gives the comparison between genoscopolamine and hyoscine in series A of 45 cases.

12 cases were able to work without drugs.

14 " remained unbenefited by genoscopolamine or hyoscine.

12 " were benefited equally (i.e. worked) by both drugs.

2 " were benefited more by genoscopolamine.

5 " " " " " hyoscine.

Dosage for Ability to Work.

Stramonium.

The optimum dose varied from m.20 to m.120 t.i.d. and was most frequently found to be m.20 t.i.d.

(13 cases were not improved by stramonium i.e. were not caused to work)

Belladonna.

The optimum dose varied from m.20 to m.40 t.i.d. and was most frequently found to be m.20 t.i.d.

(16 cases were not improved by belladonna).

Genoscopolamine.

The optimum dose varied from 1 to 4 pills t.i.d. and was most frequently found to be 1 pill t.i.d.

(20 cases were not improved by genoscopolamine).

Hyoscine.

The optimum dose varied from gr. $\frac{1}{150}$ to gr. $\frac{1}{25}$ t.i.d. and was most frequently found to be gr. $\frac{1}{150}$ t.i.d.

(16 cases were not improved by hyoscine).

A low dose of the drugs in most cases was all that was necessary to cause patients to commence working.

Mental State with special reference to depression.

In improving the mental state stramonium was found to be the most efficacious drug. Belladonna and hyoscine followed with belladonna slightly in advance of hyoscine. Genoscopolamine was the least effective of the four drugs.

The following table gives the comparison between stramonium and belladonna in series A of 45 cases.

19 cases did not manifest depression with or without drugs.
2 " remained unbenefited by stramonium or belladonna.
17 " were benefited equally by both drugs.
1 " was benefited more by belladonna.
6 " were " " " stramonium.

In series B of 65 cases.

26 cases did not manifest depression with or without drugs.
2 " remained unbenefited by stramonium or belladonna.

25 cases were benefited equally by both drugs.
2 " " " more by belladonna.
10 " " " " " stramonium.

The following table gives the comparison between genoscopolamine and hyoscine in series A of 45 cases.

19 cases did not manifest depression with or without drugs.
1 case remained unbenefited by genoscopolamine or hyoscine.
12 cases were benefited equally by both drugs.
4 " " " more by genoscopolamine.
9 " " " " " hyoscine.

Dosage for Mental State with special reference to depression.

Stramonium.

The optimum dose varied from m.20 to m.120 t.i.d. and was most frequently found to be m.20 t.i.d.

(3 cases were not improved by stramonium).

Belladonna.

The optimum dose varied from m.20 to m.70 t.i.d. and was most frequently found to be m.20 t.i.d.

(4 cases were not improved by belladonna).

Genoscopolamine.

The optimum dose varied from 1 to 4 pills t.i.d. and was most frequently found to be 1 pill t.i.d.

(8 cases were not improved by genoscopolamine).

Hyoscine.

The optimum dose varied from gr. $\frac{1}{150}$ to gr. $\frac{1}{25}$ t.i.d. and was most frequently found to be gr. $\frac{1}{100}$ t.i.d.

(2 cases were not improved by hyoscine).

To counteract depression a low dose appeared to be all that was necessary, but it was found that the doses of hyoscine were slightly higher than those of the other drugs.

Salivation.

Sialorrhoea showed much improvement on any of the four drugs. In the case of stramonium and belladonna a low dose was all that was necessary to combat sialorrhoea completely, and render the mouth normal, but the higher doses of these drugs caused much dryness of the mouth.

There was little dryness of the mouth on hyoscine and least of all on genoscopolamine.

In series A of 45 cases.

10 cases showed normal salivation without drugs.

1 " " slight dryness of the mouth without drugs.

The following table gives the comparison between stramonium and belladonna in series A.

2 cases were unaffected by stramonium or belladonna.

13 " " affected equally by both drugs.

In 12 " stramonium rendered the mouth more normal than belladonna.

In 18 " belladonna rendered the mouth more normal than stramonium.

In series B of 65 cases

11 cases showed normal salivation without drugs.

1 case " slight dryness of the mouth without drugs.

The following table gives the comparison between stramonium and belladonna in series B.

2 cases were unaffected by stramonium or belladonna.

20 " " affected equally by both drugs.

In 21 " stramonium rendered the mouth more normal than belladonna.

In 22 " belladonna rendered " " " " than stramonium.

In the larger series of cases there was less difference between the drugs than in the smaller.

The following table gives the comparison between genoscopolamine and hyoscine in series A of 45 cases.

6 cases were unaffected by genoscopolamine or hyoscine.

12 " were affected equally by both drugs.

In 9 " hyoscine rendered the mouth more normal than genoscopolamine.

In 18 " genoscopolamine rendered the mouth more normal than hyoscine.

The order of the drugs causing the least dryness of the mouth is as follows:-

1. Genoscopolamine.
2. Hyoscine.
3. Belladonna.
4. Stramonium (which caused most dryness of the mouth).

Dosage for Salivation.

Stramonium.

Most cases showing sialorrhoea without drugs were rendered very dry on a large dose of stramonium e.g. m.120 or m.150 t.i.d.

In most cases a small dose of m.20 or m.40 t.i.d. was all that was necessary to combat sialorrhoea, and render the mouth normal.

Belladonna.

Most cases showing sialorrhoea without drugs were rendered very dry on a large dose of belladonna e.g. m.70 t.i.d.

A low dose of m.20 or m.30 t.i.d. was all that was necessary in most cases to combat sialorrhoea, and render the mouth normal.

Genoscopolamine.

Only 5 cases out of 45 in series A were rendered dry by genoscopolamine on doses varying from 1 to 4 pills t.i.d. (3 of these on 4 pills t.i.d.).
16 cases with sialorrhoea were rendered normal (7 of these on 1 pill t.i.d.) on doses varying from 1 to 4 pills t.i.d.
The remainder were unaltered, or only slightly improved.

Hyoscine.

This drug rendered the mouth dry in 19 cases. The greater number on gr. $\frac{1}{25}$ t.i.d. the others on

lesser doses. 10 cases with sialorrhoea were rendered normal (6 of these on gr. $\frac{1}{75}$ t.i.d.) on doses varying from gr. $\frac{1}{150}$ to gr. $\frac{1}{25}$ t.i.d.
The remainder were unaltered, or only slightly improved.

In the case of all four drugs many patients, who were made dry on a high dose, were rendered normal on a low dose.

Vision.

Hyoscine caused less impairment of vision than any of the other drugs. Genoscopolamine caused little impairment, but a good deal was caused by stramonium, and the greatest impairment by belladonna.

In series A of 45 cases

2 cases manifested blurred vision without drugs.
The remaining 43 cases did not manifest any blurred vision without drugs.

The following table gives the comparison between stramonium and belladonna in series A of 45 cases.

4 cases were unaffected in their vision by stramonium or belladonna.

In 13 " an equal impairment of vision was produced by both drugs.

In 11 " belladonna caused less impairment of vision than stramonium.

In 17 " stramonium caused less impairment of vision than belladonna.

In series B of 65 cases

5 cases manifested blurred vision without drugs. The remaining 60 cases did not manifest any blurred vision without drugs.

The following table gives the comparison between stramonium and belladonna in series B.

6 cases were unaffected in their vision by stramonium or belladonna.

In 21 " an equal impairment of vision was produced by both drugs.

In 15 " belladonna caused less impairment of vision than stramonium.

In 23 " stramonium caused less " " vision than belladonna.

The following table gives the comparison between genoscopolamine and hyoscine in series A of 45 cases.

24 cases were unaffected in their vision by genoscopolamine or hyoscine.

In 3 " an equal impairment of vision was produced by both drugs.

In 0 " genoscopolamine caused less impairment of vision than hyoscine.

In 18 " hyoscine caused less impairment of vision than genoscopolamine.

The facts in this last table would perhaps be more clearly expressed in this form:-

On genoscopolamine 20 out of the 45 cases showed various degrees of blurred vision (and one case showed increased blurred vision), whereas on hyoscine only 2 out of 45 manifested this condition.

Dosage causing blurred vision.

Stramonium.

The dose causing blurred vision varied from m.20 to m.150 t.i.d. and was most frequently found to be m.90 t.i.d.

(13 cases remained unaffected on stramonium).

Belladonna.

The dose causing blurred vision varied from m.20 to m.70 t.i.d. and was most frequently found to be m.40 t.i.d.

(9 cases remained unaffected on belladonna).
(1 case, included in the above 9 cases, which showed slightly blurred vision without drugs remained unaffected on belladonna).

Genoscopolamine.

The dose causing blurred vision varied from 1 to 4 pills t.i.d. and was most frequently found to be 2 pills t.i.d.

(24 cases remained unaffected on genoscopolamine.)
(1 case, included in the above 24 cases, which showed slightly blurred vision without drugs remained unaffected on genoscopolamine).

Hyoscine.

Two cases only showed blurred vision on hyoscine on doses of gr. $\frac{1}{25}$ and gr. $\frac{1}{150}$ t.i.d. respectively.

(43 cases remained unaffected on hyoscine. 2 cases, included in the above 43 cases, which showed slightly blurred vision without drugs remained unaffected on hyoscine).

It was found that with stramonium, belladonna, and genoscopolamine the middle doses produced the maximum degree of blurred vision in the greatest number of cases.

With hyoscine vision was practically unaffected.

Other Manifestations.

The mask-like face, and the monotonous tone in the speech were found not to improve throughout the treatment, but diminished sialorrhoea often rendered the speech more normal. The lessened bradykinesia, and bradyphrenia, which accompanied an improved mental condition, often caused the patients to become more fluent in conversation. Although the mask-like face itself was unaltered, there was an increased propensity on the part of the patients to laugh and smile as the mental condition improved, and this was especially noticeable when they were on stramonium.

The oculo-gyric crises showed only a very slight tendency to diminish in frequency, and duration, whichever of the four drugs was being taken. No difference could be discerned between the drugs in their efficacy in lessening this manifestation, however, and the dose appeared to have no influence.

It was found throughout the treatment that, with few exceptions, the behaviour of the patients was fairly good, and varied little with the drug used, or the increase of dose.

The fundamentally simple, childish, sympathy-craving disposition did not alter. The frequent examinations to some extent satisfied the desire for attention, and requests for change of drugs became less frequent, although the latter might be accounted for by the fact that they were all on the same medicine at the same time, and therefore could not be jealous of one another.

The patients were generally more happy and contented on any of these drugs given orally, than on hyoscine given by injection. On stramonium particularly was this noted. It caused a greater feeling of well-being among the patients, and several showed a tendency to put on weight.

The toxic symptoms of mild confusion, and slight giddiness appeared in about a third of the patients on the highest doses of all four drugs,

but they were milder in the case of genoscopolamine than with the other three drugs.

The doses on which these symptoms appeared in about a third of the cases formed the upper limit of increase for each drug, and beyond this it was considered unsafe to proceed. No gastro-intestinal symptoms arose.

The toxic symptoms are discussed more fully in the section of the thesis which follows.

The case of idiopathic paralysis agitans (case 11) showed some slight all-round improvement on each of the four drugs; but stramonium improved rigidity less than belladonna, and did not affect the tremor, whereas the other three drugs slightly ameliorated this latter manifestation. His gait, on the other hand, showed slightly more improvement on stramonium, but a high dose of stramonium caused him to develop marked blurred vision and much dryness of the mouth. The toxic manifestations of slight giddiness and mild confusion prevented him from being advanced from 120 to 150 minims t.i.d. of stramonium. It was found possible however to give this case 70 minims of belladonna, but the dose caused more dryness of the mouth than 120 minims of stramonium.

A case of hemiplegic type, of encephalitic origin (case 16), showed a slight but general improvement on stramonium and belladonna. Genoscopolamine and hyoscine were not quite so efficacious.

DISCUSSION.

It has been stated already that rigidity was the manifestation of the post-encephalitic Parkinsonian state that was most benefited by any one of the four drugs. Most of the writers agree with this finding, but there is some difference of opinion on the question of tremor. Carmichael and Green (13) state in their conclusions that tincture of stramonium does not affect tremor, but with this finding the author is unable to agree. The improvement in tremor was fairly general throughout the author's cases, but was less in degree than the improvement in rigidity. Worster-Drought & Hill (23) found that tremor, although not abolished by stramonium, was ameliorated. In a few of the author's cases, however, tremor was found to disappear on suitable doses of any of the four drugs, but especially was this noticed on stramonium. Relatively higher doses of this drug were required to combat tremor than to lessen rigidity.

Bradykinesia, and the mental condition of the patient were for the most part improved by approximately the same low dose of any of the four drugs. It appears, therefore, that bradykinesia is made up of a mental or bradyphrenic element, together with a lesser element of muscular rigidity.

The most frequently occuring optimum dose for the improvement in gait came about the middle of the scale of doses in the case of each of the four drugs. It was found that the improved mental state called forth a greater effort on the part of the patients, and therefore improved their gait before the maximum diminution of rigidity was attained. The mental factor would therefore account for the dose for the improvement of gait being lower than that for the improvement of rigidity.

A low dose of any of the four drugs was sufficient to improve the patients' mental state, but slightly higher doses often improved it still further. The patients often commenced working on low doses of the drugs. In common with many writers the author considers stramonium to be of much benefit in improving the mental state, and he also found it to be superior in this respect to the other drugs used. On looking back on his previous experience with hyoscine by injection, the author can definitely state that the patients were more happy and contented on oral medication.

The toxic manifestations of dryness of the mouth and blurred vision, although marked in some of the cases on stramonium and belladonna, did not greatly inconvenience the patients, who preferred to endure them rather than to have a return, or an increase, of the other manifestation on lower doses.

Carmichael and Green (13) state that the blurred vision due to pupil dilatation is considerably relieved by the daily instillation of one drop of ¼% eserine into each eye (they found it sufficient in some cases to do this every other day). They also combated the dryness of the mouth by giving thirst-quencher tablets (Burrough's Wellcome & Co.) to be slowly dissolved in the mouth. A few patients found relief when tincture of jaborandum was added to the stramonium mixture. The author did not adopt these methods as he would have been introducing additional factors into the research.

When the toxic symptoms of slight giddiness and mild confusion appeared in about a third of the patients on higher doses of the drugs, they served as a good indication that a maximum had been reached and that it would not be safe to proceed higher. All cases were therefore stopped at this level. The majority, who did not show toxic symptoms, might have been taken higher although not perhaps without an element of risk, but such a proceeding would have introduced additional factors into the research.

Genoscopolamine caused less giddiness and confusion than the other three drugs.

The question of toxicity is a difficult one. In one sense all the four drugs are equally toxic if pushed beyond certain limits. Toxicity and improve-

ment in the condition of the patient must therefore be compared relatively to one another. Certain drugs, for example stramonium and belladonna, produce their optimum improvement before the toxic limit is reached, whereas others, for example genoscopolamine and hyoscine, produce their optimum improvement at the same time that toxic symptoms are making their appearance. Genoscopolamine and hyoscine must therefore be considered more toxic. Judged by this standard the toxicity is in the following order:- Hyoscine (most toxic), genoscopolamine, belladonna, stramonium (least toxic). Stramonium is considered to be less toxic than belladonna since greater improvement was attained by stramonium before the onset of the toxic symptoms.

On stramonium it was found that a few cases of mild Parkinsonism, and a few of the more elderly cases, (including the case of paralysis agitans), could not stand the highest doses. This suggests that the tolerance for stramonium is directly proportional to the degree of Parkinsonism.

A careful study of the results showed that if it had been possible to raise the dose of all the patients on stramonium to the maximum i.e. minims 150 t.i.d. no material difference would have been found in the author's figures.

Carmichael and Green (13) conclude that the whole tincture of stramonium is more efficacious than

atropine or laevo-and dextro-rotatory hyoscyamine. The author found that tincture of stramonium is more efficacious than tincture of belladonna (which is said to contain a mixture of hyoscyamine and atropine), genoscopolamine, or hyoscine. It might therefore be suggested that its superiority is due to the combined action of hyoscyamine with hyoscine, and daturine (which is said to be identical with hyoscyamine). On the other hand stramonium might contain certain additional alkaloids as yet unknown.

Note. Prior to the inauguration of these researches the author had some experience of the administration of genoscopolamine hydrobromate in 10 cases showing varying degrees of post-encephalitic Parkinsonism, given continuously, over a period of six months. It was given in doses of 1 to 2 pills ($\frac{1}{2}$ to 1 milligram) t.i.d. He recorded moderate physical and mental benefit resulting from these administrations and in no cases were there any toxic symptoms.

CONCLUSIONS.

The following conclusions are based on the results of the author's investigation of the treatment of a series of 65 cases suffering from the post-encephalitic Parkinsonian state. Of these cases 45 were treated with hyoscine hydrobromide, tincture of stramonium, tincture of belladonna, and genoscopolamine hydrobromate, and the remaining 20 cases were treated with tincture of stramonium and tincture of belladonna only. Each drug was administered separately in increasing doses over a period of time, and was given by the oral route.

1. Tincture of stramonium is the most efficacious of the four drugs in the treatment of the post-encephalitic Parkinsonian state.

2. Tincture of stramonium is also the most efficacious in relieving any one of the manifestations considered separately.

3. The order of efficacy of the drugs is as follows:-
   (1) Tincture of stramonium. (2) Tincture of belladonna. (3) Genoscopolamine hydrobromate and hyoscine hydrobromide (approximately equal).

4. The four drugs can be classified according to their efficacy into two main groups:-
   (a) Tincture of stramonium and tincture of belladonna.
   (b) Genoscopolamine hydrobromate and hyoscine hydrobromide.

The drugs of the first group are much more beneficial than those of the second.

5. The action of the four drugs is palliative, and not curative.

6. These drugs are not cumulative, and withdrawal of the drug produces an immediate return of symptoms.

7. Rigidity is the manifestation of the post-encephalitic Parkinsonian state that is most benefited by any of the four drugs. The drugs are effective in the order given in conclusion 3. The optimum dose of each drug in relieving this manifestation is high.

8. The improvement in gait, and in bradykinesia, is considerable, but less than that shown by rigidity. The drugs are effective in the general order given in conclusion 3. The optimum dose of any of the four drugs which causes improvement in the gait is generally moderate, and that which causes improvement in bradykinesia is generally low.

9. Tremor is only improved to a moderate degree, and the improvement is produced chiefly by very large doses of tincture of stramonium. Tincture of belladonna, genoscopolamine and hyoscine in large doses have a lesser, and approximately equal effect.

10. A low dose of any of the four drugs is sufficient to cause many of the patients to commence work. The order of efficacy is as already given in conclusion 3.

11. The mental state of the patient with special reference to depression is much improved by all the four drugs, but especially by tincture of stramonium. The optimum dose generally required is low. The drugs are efficacious in the order given in conclusion 3.

12. Sialorrhoea is much benefited by any of the four drugs. It is usually combated completely by low doses of tincture of stramonium or tincture of belladonna, or by higher doses of genoscopolamine or hyoscine.

13. High doses of tincture of stramonium or tincture of belladonna cause much blurred vision and dryness of the mouth, but these pass off almost immediately on withdrawing the drug.

14. The general optimum dose of each of the drugs is as follows:- Tincture of stramonium 60 to 90 minims, t.i.d., tincture of belladonna 50 to 60 minims t.i.d., genoscopolamine hydrobromate $1\frac{1}{2}$ to 2 milligrams (3 to 4 pills) t.i.d., hyoscine hydrobromide $\frac{1}{75}$ to $\frac{1}{25}$ of a grain t.i.d.

15. The maximum doses tolerated by a great majority of the patients are:- Tincture of stramonium 150 minims t.i.d., tincture of belladonna 70 minims t.i.d., genoscopolamine hydrobromate 2 milligrams t.i.d., hyoscine hydrobromide $\frac{1}{25}$ of a grain t.i.d.

16. The mask-like face, and the monotonous tone in the speech are not improved by any of the four drugs. The oculo-gyric crises are only slightly ameliorated, and this slight improvement usually takes place on low doses of any of the four drugs, which are in this instance equally efficacious.

17. The toxicity of the four drugs is in the following order:- (a) Tincture of stramonium (least toxic). (b) Tincture of belladonna. (c) Genoscopolamine hydrobromate. (d) Hyoscine hydrobromide (most toxic).

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A P P E N D I X.

APPENDIX I.

This appendix contains seven tables showing the comparison between the numbers of cases relieved by each of the drugs. Each manifestation is taken separately. The first six tables (Nos. I. to VI.) are compiled from series A of 45 cases. The last table (No. VII.) is compiled from series B of 65 cases.

The figures in brackets in the tables are percentages which have been inserted as an aid to comparison.

The percentages in black type are worked out from the proportion of cases showing improvement (or otherwise) out of a total of 45 cases in series A, or of 65 cases in series B.

In order to arrive at the percentages in red type, the number of cases not showing the manifestation in question was deducted from the total number of cases in the series. This gives a percentage out of a total number of cases in which improvement was possible. This total naturally varies with each manifestation.

Under the heading salivation it was the aim of the author to show the number of cases in which the mouth was rendered most normal. Sialorrhoea is generally combated by low doses of the drugs, but on high doses the mouth often becomes very dry. The drugs are compared in their effect on salivation

for the purpose of these tables at the level of the maximum dose administered.

The last section of the tables dealing with vision shows the comparison (as expressed by the number of cases) of the state of vision on the maximum dose of the drugs given.

Percentages are worked out to the first place of decimals.

The Comparison of Tincture of Stramonium with Tincture of Belladonna.

Series A.

Number of cases treated with Tr. Stramonii and Tr. Belladonnae = 45

(Males 30) (Females 15)

Table I.

Manifestations.	Number of cases benefiting more by Tr. Stramonii.	Number of cases benefiting more by Tr. Belladonnae.	Number of cases in which Tr. Stramonii & Tr. Belladonnae were of equal efficacy.	Number of cases showing no benefit under Tr. Stramonii or Tr. Belladonnae.	Number of cases not showing the manifestation in question.
Rigidity.	11 (24·4%) (26·2%)	5 (11·1%) (11·9%)	26 (57·8%) (61·9%)	0 (0%) (0%)	3 (6·7%)
Tremor.	13 (28·9%) (34·2%)	4 (8·9%) (10·5%)	17 (37·8%) (44·7%)	4 (8·9%) (10·5%)	7(15·5%)
Degree of Bradykinesia.	13 (28·9%) (30·2%)	2 (4·4%) (4·6%)	20 (44·4%) (46·5%)	8(17·8%) (18·6%)	2 (4·4%)
Gait.	19 (42·2%) (43·2%)	6 (13·3%) (13·6%)	16 (35·5%) (36·4%)	3 (6·7%) (6.8%)	1 (2·2%)
Ability to Work.	3 (6·7%) (9·1%)	0 (0%) (0%)	17 (37·8%) (51·5%)	13(28·9%) (39·4%)	12(26·7%)
Mental State with reference to depression.	6 (13·3%) (23·1%)	1 (2·2%) (3·8%)	17 (37·8%) (65·4%)	2 (4·4%) (7·7%)	19(42·2%)

	Number of cases in which Tr. Stramonii rendered the mouth more normal than Tr.Belladonnae.	Number of cases in which Tr.Belladonnae rendered the mouth more normal than Tr. Stramonii.	Number of cases in which Tr.Stramonii & Tr. Belladonnae produced an equal effect.	Number of cases in which Tr.Stramonii & Tr. Belladonnae produced no effect.
Salivation.	12 (26·7%)	18 (40%)	13 (28·9%)	2 (4·4%)

	Number of cases in which Tr.Stramonii caused less impairment of vision than Tr.Belladonnae.	Number of cases in which Tr.Belladonnae caused less impairment of vision than Tr.Stramonii.	Number of cases in which both drugs produced an equal impairment of vision.	Number of cases in which no effect whatever was produced by either drug on vision.
Vision.	17 (37·8%)	11 (24·4%)	13 (28·9%)	4 (8·9%)

The Comparison of Tincture of Stramonium with Genoscopolamine.

Series A.

Total number of cases treated with Tr. Stramonii and Genoscopolamine = 45.

(Males 30) (Females 15)

Table II.

Manifestations.	Number of cases benefiting more by Tr. Stramonii.	Number of cases benefiting more by Genoscopolamine.	Number of cases where Tr. Stramonii & Genoscopolamine were of equal efficacy.	Number of cases showing no benefit under Tr.Stramonii or Genoscopolamine.	Number of cases not showing the manifestation in question.
Rigidity.	22 (48·9%) (52·4%)	2 (4·4%) (4·8%)	18 (40%) (42·8%)	0 (0%) (0%)	3 (6·7%)
Tremor.	15 (33·3%) (39·5%)	3 (6·7%) (7·9%)	16 (35·5%) (42·1%)	4 (8·9) (10·5)	7 (15·5%)
Degree of Bradykinesia.	16 (35·5%) (37·2%)	0 (0%) (0%)	18 (40%) (41·9%)	9 (20%) (20·9%)	2 (4·4%)
Gait.	21 (46·7%) (47·7%)	6 (13·3%) (13·6%)	13 (28·9%) (29·5%)	4 (8·9%) (9·1%)	1 (2·2%)
Ability to Work.	6 (13·3%) (18·2%)	1 (2·2%) (3·0%)	14 (31·1%) (42.4%)	12 (26·7%) (36.4%)	12 (26·7%)
Mental State with reference to depression.	9 (20%) (34·6%)	1 (2·2%) (3·8%)	14 (31·1%) (53·8%)	2 (4·4%) (7·7%)	19 (42·2%)

	Number of cases in which Tr. Stramonii rendered the mouth more normal than Genoscopolamine.	Number of cases in which Genoscopolamine rendered the mouth more normal than Tr.Stramonii.	Number of cases in which Tr.Stramonii & Genoscopolamine produced an equal effect.	Number of cases in which Tr.Stramonii & Genoscopolamine produced no effect.	
Salivation.	11 (24·4%)	25 (55·5%)	5 (11·1%)	4 (8·9%)	
	Number of cases in which Tr.Stramonii caused less impairment of vision than Genoscopolamine.	Number of cases in which Genoscopolamine caused less impairment of vision than Tr. Stramonii.	Number of cases in which both drugs produced an equal impairment of vision.	Number of cases in which no effect whatever was produced by either drug on vision.	
Vision.	4 (8·9%)	24 (53·3%)	7 (15·5%)	10 (22·2%)	

The Comparison of Tincture of Belladonna with Genoscopolamine.

Series A.
Total number of cases treated with Tr. Belladonnae and Genoscopolamine = 45.
(Males 30) (Females 15)
Table III.

Manifestations.	Number of cases benefiting more by Tr. Belladonnae.	Number of cases benefiting more by Genoscopolamine.	Number of cases where Tr. Belladonnae & Genoscopolamine were of equal efficacy.	Number of cases showing no benefit under Tr. Belladonnae or Genoscopolamine.	Number of cases not showing the manifestation in question.
Rigidity.	15 (33·3%) (35·7%)	0 (0%) (0%)	26 (57·8%) (61·9%)	1 (2·2%) (2·4%)	3 (6·7%)
Tremor.	5 (11·1%) (13·2%)	4 (8·9%) (10·5%)	18 (40%) (47·4%)	11 (24·4%) (28·9%)	7 (15·5%)
Degree of Bradykinesia.	10 (22·2%) (23·2%)	1 (2·2%) (2·3%)	21 (46·7%) (48·8%)	11 (24·4%) (25·6%)	2 (4·4%)
Gait.	17 (37·8%) (38·6%)	5 (11·1%) (11·4%)	17 (37·8%) (38·6%)	5 (11·1%) (11·4%)	1 (2·2%)
Ability to Work.	4 (8·9%) (12·1%)	2 (4·4%) (6·1%)	13 (28·9%) (39·4%)	14 (31·1%) (42·4%)	12 (26·7%)
Mental State with reference to depression.	8 (17·8%) (30·8%)	3 (6·7%) (11·5%)	13 (28·9%) (50%)	2 (4·4%) (7·7%)	19 (42·2%)

	Number of cases in which Tr.Belladonnae rendered the mouth more normal than Genoscopolamine.	Number of cases in which Genoscopolamine rendered the mouth more normal than Tr. Belladonnae.	Number of cases in which Tr.Belladonnae & Genoscopolamine produced an equal effect.	Number of cases in which Tr. Belladonnae & Genoscopolamine produced no effect.	
Salivation.	9 (20%)	20 (44·4%)	13 (28·9%)	3 (6·7%)	

	Number of cases in which Tr. Belladonnae caused less impairment of vision than Genoscopolamine.	Number of cases in which Genoscopolamine caused less impairment of vision than Tr. Belladonnae.	Number of cases in which both drugs produced an equal impairment of vision.	Number of cases in which no effect whatever was produced by either drug on vision.	
Vision.	2 (4·4%)	29 (64·4%)	7 (15·5%)	7 (15·5%)	

The Comparison of Tincture of Belladonna with Hyoscine Hydrobromide.

Series A.
Total number of cases treated with Tr. Belladonnae and Hyoscine Hydrobrom. = 45.
(Males 30) (Females 15)

Table IV.

Manifestations.	Number of cases benefiting more by Tr. Belladonnae.	Number of cases benefiting more by Hyoscine Hydrobrom.	Number of cases where Tr. Belladonnae and Hyoscine Hydrobrom. were of equal efficacy.	Number of cases showing no benefit under Tr. Belladonnae or Hyoscine Hydrobrom.	Number of cases not showing the manifestation in question.
Rigidity.	21 (46·7%) (50%)	7 (15·5%) (16·6%)	13 (28·9%) (30·9%)	1 (2·2%) (2·4%)	3 (6·7%)
Tremor.	8 (17·8%) (21·1%)	9 (20%) (23·7%)	14 (31·1%) (36·8%)	7 (15·5%) (18·4%)	7 (15·5%)
Degree of Bradykinesia.	8 (17·8%) (18·6%)	2 (4·4%) (4·6%)	23 (51·1%) (53·5%)	10 (22·2%) (23·2%)	2 (4·4%)
Gait.	23 (51·1%) (52·3%)	7 (15·5%) (15·9%)	11 (24·4%) (25%)	3 (6·7%) (6·8%)	1 (2·2%)
Ability to Work.	3 (6·7%) (9·1%)	4 (8·9%) (12·1%)	14 (31·1%) (42·4%)	12 (26·7%) (36·4%)	12 (26·7%)
Mental State with reference to depression.	6 (13·3%) (23·1%)	5 (11·1%) (19·2%)	13 (28·9%) (50%)	2 (4·4%) (7·7%)	19 (42·2%)

	Number of cases in which Tr.Belladonnae rendered the mouth more normal than Hyoscine Hydrobrom.	Number of cases in which Hyoscine Hydrobrom. rendered the mouth more normal than Tr. Belladonnae.	Number of cases in which Tr.Belladonnae & Hyoscine Hydrobrom. produced an equal effect.	Number of cases in which Tr.Belladonnae & Hyoscine Hydrobrom. produced no effect.
Salivation.	8 (17·8%)	16 (35·5%)	18 (40%)	3 (6·7%)

	Number of cases in which Tr.Belladonnae caused less impairment of vision than Hyoscine Hydrobrom.	Number of cases in which Hyoscine Hydrobrom. caused less impairment of vision than Tr. Belladonnae.	Number of cases in which both drugs produced an equal impairment of vision.	Number of cases in which no effect whatever was produced by either drug on vision.
Vision.	0 (0%)	36 (80%)	0 (0%)	9 (20%)

The Comparison of Hyoscine Hydrobromide with Genoscopolamine.

Series A.

Total number of cases treated with Tr. Belladonnae and Genoscopolamine = 45.

(Males 30) (Females 15)

Table V.

Manifestations.	Number of cases benefiting more by Hyoscine Hydrobrom.	Number of cases benefiting more by Genoscopolamine.	Number of cases in which Hyoscine Hydrobrom. & Genoscopolamine were of equal efficacy.	Number of cases showing no benefit under Hyoscine Hydrobrom. or Genoscopolamine.	Number of cases not showing the manifestation in question.
Rigidity.	10 (22·2%) (23·8%)	14 (31·1%) (33·3%)	16 (35·5%) (38·1%)	2 (4·4%) (4·8%)	3 (6·7%)
Tremor.	10 (22·2%) (26·3%)	9 (20%) (23·7%)	13 (28·9%) (34·2%)	6 (13·3%) (15·8%)	7 (15·5%)
Degree of Bradykinesia.	5 (11·1%) (11·6%)	5 (11·1%) (11·6%)	24 (53·3%) (55·8%)	9 (20%) (20·9%)	2 (4·4%)
Gait.	11 (24·4%) (25%)	15 (33·3%) (34·1%)	13 (28·9%) (29·5%)	5 (11·1%) (11·4%)	1 (2·2%)
Ability to Work.	5 (11·1%) (15·1%)	2 (4·4%) (6·1%)	12 (26·7%) (36·4%)	14 (31·1%) (42·4%)	12 (26·7%)
Mental State with reference to depression.	9 (20%) (34·6%)	4 (8·9%) (15·4%)	12 (26·7%) (46·1%)	1 (2·2%) (3·8%)	19 (42·2%)

	Number of cases in which Hyoscine Hydrobrom. rendered the mouth more normal than Genoscopolamine.	Number of cases in which Genoscopolamine rendered the mouth more normal than Hyoscine Hydrobrom.	Number of cases in which Hyoscine Hydrobrom. & Genoscopolamine produced an equal effect.	Number of cases in which Hyoscine Hydrobrom. & Genoscopolamine produced no effect.
Salivation.	9 (20%)	18 (40%)	12 (26·7%)	6 (13·3%)

	Number of cases in which Hyoscine Hydrobrom. caused less impairment of vision than Genoscopolamine.	Number of cases in which Genoscopolamine caused less impairment of vision than Hyoscine Hydrobrom.	Number of cases in which both drugs produced an equal impairment of vision.	Number of cases in which no effect whatever was produced by either drug on vision.
Vision.	18 (40%)	0 (0%)	3 (6·7%)	24 (53·3%)

The Comparison of Hyoscine Hydrobromide with Tincture of Stramonium.

Series A.

Total number of cases treated with Hyoscine Hydrobrom. & Tr. Stramonii = 45.

(Males 30) (Females 15)

Table VI.

Manifestations.	Number of cases benefiting more by Hyoscine Hydrobrom.	Number of cases benefiting more by Tr. Stramonii.	Number of cases in which Hyoscine Hydrobrom. & Tr.Stramonii were of equal efficacy.	Number of cases showing no benefit under Hyoscine Hydrobrom. or Tr. Stramonii.	Number of cases not showing the manifestation in question.
Rigidity.	4 (8·9%) (9·5%)	23 (51·1%) (54·8%)	15 (33·3%) (35·7%)	0 (0%) (0%)	3 (6·7%)
Tremor.	4 (8·9%) (10·5%)	14 (31·1%) (36·8%)	17 (37·8%) (44·7%)	3 (6·7%) (7·9%)	7 (15·5%)
Degree of Bradykinesia.	1 (2·2%) (2·3%)	18 (40%) (41·9%)	16 (35·5%) (37·2%)	8 (17·8%) (18·6%)	2 (4·4%)
Gait.	3 (6·7%) (6·8%)	26 (57·8%) (59·1%)	13 (28·9%) (29·5%)	2 (4·4%) (4·5%)	1 (2·2%)
Ability to Work.	1 (2·2%) (3·0%)	4 (8·9%) (12·1%)	16 (35·5%) (48·5%)	12 (26·7%) (36·4%)	12 (26·7%)
Mental State with reference to depression.	3 (6·7%) (11·5%)	9 (20%) (34·6%)	14 (31·1%) (53·8%)	0 (0%) (0%)	19 (42·2%)

	Number of cases in which Hyoscine Hydrobrom. rendered the mouth more normal than Tr. Stramonii.	Number of cases in which Tr.Stramonii rendered the mouth more normal than Hyoscine Hydrobrom.	Number of cases in which Hyoscine Hydrobrom. & Tr.Stramonii produced an equal effect.	Number of cases in which Hyoscine Hydrobrom. & Tr.Stramonii produced no effect.
Salivation.	19 (42·2%)	10 (22·2%)	13 (28·9%)	3 (6·7%)

	Number of cases in which Hyoscine Hydrobrom. caused less impairment of vision than Tr. Stramonii.	Number of cases in which Tr.Stramonii caused less impairment of vision than Hyoscine Hydrobrom.	Number of cases in which both drugs produced an equal impairment of vision.	Number of cases in which no effect whatever was produced by either drug on vision.
Vision.	32 (71·1%)	1 (2·2%)	0 (0%)	12 (26·7%)

The Comparison of Tr. Stramonii with Tr. Belladonnae.

Series B.

Total number of cases treated with Tr. Stramonii & Tr. Belladonnae = 65.

(Males 41) (Females 24).

Table VII.

Manifestations.	Number of cases benefiting more by Tr. Stramonii.	Number of cases benefiting more by Tr. Belladonnae.	Number of cases where Tr. Stramonii and Tr. Belladonnae were of equal efficacy.	Number of cases showing no benefit under Tr.Stramonii or Tr. Belladonnae.	Number of cases not showing the manifestation in question.
Rigidity.	20 (31·2%) (32·3%)	6 (9·2%) (9·7%)	35 (53·8%) (56·4%)	1 (1·5%) (1·6%)	3 (4·6%)
Tremor.	20 (31·2%) (37·0%)	7 (10·7%) (13·0%)	22 (33·8%) (40·7%)	5 (7·7%) (9·3%)	11 (16·9%)
Degree of Bradykinesia.	14 (21·5%) (22·2%)	2 (3·1%) (3·2%)	37 (56·9%) (58·7%)	10 (15·4%) (15·9%)	2 (3·1%)
Gait.	29 (44·6%) (45·3%)	6 (9·2%) (9·4%)	23 (35·4%) (35·9%)	6 (9·2%) (9·4%)	1 (1·5%)
Ability to Work.	4 (6·1%) (8·2%)	0 (0%) (0%)	25 (38·4%) (51·0%)	20 (31·2%) (40·8%)	16 (24·6%)
Mental State with reference to depression.	10 (15·4%) (25·6%)	2 (3·1%) (5·1%)	25 (38·4%) (64·1%)	2 (3·1%) (5·1%)	26 (40%)

	Number of cases in which Tr.Stramonii rendered the mouth more normal than Tr. Belladonnae.	Number of cases in which Tr.Belladonnae rendered the mouth more normal than Tr. Stramonii.	Number of cases in which Tr.Stramonii & Tr. Belladonnae produced an equal effect.	Number of cases in which Tr.Stramonii & Tr. Belladonnae produced no effect.	
Salivation.	21 (32·3%)	22 (33·8%)	20 (31·2%)	2 (3·1%)	
	Number of cases in which Tr.Stramonii caused less impairment of vision than Tr.Belladonnae.	Number of cases in which Tr. Belladonnae caused less impairment of vision than Tr. Stramonii.	Number of cases in which both drugs produced an equal impairment of vision.	Number of cases in which no effect whatever was produced by either drug on vision.	
Vision.	23 (35·4%)	15 (23·1%)	21 (32·3%)	6 (9·2%)	

APPENDIX II.

This appendix consists of tables which contrast the state of the patients on each drug with their state without drugs.

The state of each patient without drugs is recorded under the following headings:- rigidity, tremor, bradykinesia, gait, ability to work, mental state with special reference to depression, and salivation. The presence or absence of blurred vision without drugs is also recorded. The descriptive terms used are brief, and they are:- "very marked", "marked", "moderate", "slight", and "very slight". They are used to describe rigidity, tremor, bradykinesia, and as far as possible the degree of depression, and the amount of salivation. The gait is more fully described. The contraction "V" used in the tables stands for "very".

In the other columns the maximum improvement of each manifestation is recorded under the headings of the various drugs, and the doses causing this maximum improvement are also given. The state of the manifestation is not further improved by higher doses than those shown. By means of these tables the efficacy of each of the four drugs can be rapidly contrasted, not only for each case, but for each separate manifestation.

The same terms are used for recording the state of each manifestation as altered by the drugs. The

terms "moderate", "slight", or "very slight" do not mean that the manifestation has improved moderately, slightly, or very slightly, but that the actual state of the manifestation is now present in moderate, or in slight, or in very slight degree, as the case may be. In the case of rigidity when both the upper and the lower limbs show a different degree of this manifestation it is noted thus:- arms - slight.
legs - moderate.

In the case of gait the whole of the description as given in the "state without drugs" column is not repeated, but only those points which are improved. A point not mentioned is, therefore, to be taken as still present, and to the same degree.

A minus sign placed above a descriptive term modifies its meaning in the direction of reduced severity e.g. "moderate—" means that the manifestation is present in a degree between moderate and slight. The term "nil" means that the manifestation in question has been completely alleviated.

The doses are given in the case of hyoscine hydrobromide in fractions of a grain, in the case of tincture of stramonium and of tincture of belladonna in minims, and in the case of genoscopolamine in number of pills (each pill contains $\frac{1}{2}$ milligram).

Following the information on salivation there is occasionally an extra figure in brackets. If in round brackets the figure indicates the dose at which salivation becomes normal. If the figure is in square brackets it indicates the dose which just causes the mouth to become too dry, and the normal point lies, therefore, between that dose and the one next below.

These tables were compiled from the author's own case records made at the time of the examination of the patient.

The following are the cases who had their treatment curtailed owing to the onset of toxic symptoms.

On hyoscine hydrobromide.

Case No.17 and case No.29, who were advanced to gr. $\frac{1}{25}$ t.i.d., had to be immediately reduced to the lower dose of gr. $\frac{1}{50}$ t.i.d.

Case No.18 was not advanced beyond gr. $\frac{1}{75}$ t.i.d.

On tincture of stramonium.

Case No.17 had to be immediately reduced from m.90 to m.60 t.i.d.

Cases No.5 and 23 were not advanced beyond m.60 t.i.d.

Cases No.1, 15, 28, 31, 48 were not advanced beyond m.90 t.i.d.

Cases No.3, 11, 14, 32, 34, 37 were not advanced beyond m.120 t.i.d.

Case No.11 suffered from idiopathic paralysis agitans.

Cases No. 16 and 54 were post-encephalitics of hemiplegic type.

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 1 (M.A) Aet 42.	Rigidity.	Arms - Moderate. Legs - Marked.	Arms - V. slight. Legs - Slight.	1/25	Arms - V. slight. Legs - Moderate.	60	Arms - Nil. Legs - Slight.	50	Arms - V.slight. Legs - Slight.	2
	Tremor.	Slight.	V.slight.	1/150	V. slight.	60	No change.	-	No change.	-
	Degree of Bradykinesia.	Moderate.	Slight.	1/150	Slight.	40	Slight.	20	Slight.	3
	Gait.	Slow Parkinsonian gait. Does not swing arms. Tends to drag feet. Stamps left foot. Stands unaided.	Stamps left foot only v. slightly.	1/50	Does not drag feet. Walks with moderate speed.	40	Does not drag feet.	20	Does not stamp or drag feet. Walks with moderate speed.	3
	Salivation.	Normal.	Moderately dry.	1/75	V. dry indeed.	90	V. dry.	40	Slightly dry.	1
	Vision.	Not blurred.	No change.	-	Slightly blurred.	90	Slightly blurred.	50	No change.	-
	Ability to work.	Not working.	Works in ward.	1/150	No change.	-	No change.	-	Does a little dusting in ward.	2
	Mental State c ref. to depression.	Moderately depressed.	Not depressed.	1/25	No depression.	20	Slightly depressed.	30	No change.	-
Case 2(R.E.B) Aet 30	Rigidity.	Moderate.	Slight.	1/25	Slight.	60	Moderate	70	Moderate	3
	Tremor.	Moderate.	V.slight.	1/25	Nil.	90	Nil.	20	Nil.	1
	Degree of Bradykinesia.	Marked.	Slight.	1/25	V.slight.	90	Slight.	40	Moderate.	1
	Gait.	Unsteady on feet. Slow Parkinsonian gait. Does not swing left arm. Stands unaided	Can walk for longer distances. More steady on feet.	1/50	Walks faster & easier. Not unsteady on feet.	120	More steady on feet.	20	More steady on feet.	2
	Salivation.	Excess but only dribbles at meal times.	Slight dryness. [1/75]	1/75	Moderately dry (40)	90	Slightly dry (20)	30	Slightly dry (1)	4
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	60	Slightly blurred.	70	No change.	-
	Ability to work.	Not working.	Works in ward.	1/150	Works in ward.	20	Works in ward.	20	Works in ward	1
	Mental State c ref. to depression.	Slightly depressed.	Not depressed.	1/75	Not depressed.	20	Not depressed.	20	Not depressed.	2

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 3 (A.E.C) Aet 18.	Rigidity.	Slight	V.slight.	1/25	V.slight.	90	V. slight.	40	V. slight.	1
	Tremor.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	V.slight.	Nil.	1/150	Nil.	40	Nil.	30	Nil.	1
	Gait.	Leans forward very slightly. Does not swing arms which are held slightly flexed.	Swings rt. arm.a little.	1/75	Swings rt. arm a little.	60	Just swings arms a very little.	60	Swings rt. arm a little	2
	Salivation.	Excess but only dribbles at times.	Normal.	1/75	Slightly dry (20)	40	Normal.	20	Normal	1
	Vision.	Not blurred.	Not com-plained of.	-	Slightly blurred.	20	V.blurred dose to dose.	70	Slightly blurred dose to dose.	1
	Ability to work.	Works in ward.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-
Case 4 (P.C) Aet 33.	Rigidity.	Arms - slight. Legs - Moderate.	No change.	-	Arms - V. slight. Legs - Slight.	90	Arms - V. slight. Legs - Moderate.	60	Arms - V. slight. Legs - Moderate.	2
	Tremor.	Slight.	Nil.	1/150	V.slight.	90	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Moderate.	1/150	Slight.	60	Moderate.	20	Slight.	3
	Gait.	Slow Parkin-sonian gait. Does not swing arms which are held slightly flexed. Retro-pulsion. Stands unaided.	Walks a little more easily.	1/75	Walks a little more easily.	120	Swings arms a very little. Retropulsion slight.	70	Swings arms a very little. Retropulsion slight.	3
	Salivation.	Excess but only dribbles at times.	Slight ex-cess does not dribble	1/100	Slight ex-cess does not dribble.	60	Slight excess. Does not dribble.	20	Slight excess does not dribble.	1
	Vision.	Not blurred.	Not com-plained of.	-	Slightly blurred.	90	No change.	-	No change.	-
	Ability to work.	Works with occupation class.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose. m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 5 (H.C) Aet 19.	Rigidity.	Slight.	Nil.	1/150	Nil.	20	Nil.	50	Nil.	1
	Tremor.	V.slight.	Nil.	1/150	Nil.	20	Nil.	20	Nil.	1
	Degree of Bradykinesia.	Slight.	Nil.	1/150	Nil.	40	Nil.	30	No change.	-
	Gait.	Stamps his feet slightly. Stands - unaided.	Normal.	1/150	Normal.	40	Normal.	20	Normal.	4
	Salivation.	Normal.	Slightly dry.	1/25	Slightly dry.	40	Slightly dry.	30	No change.	-
	Vision.	Not blurred.	Not com-plained of.	-	No change.	-	Moderately blurred.	70	Slightly blurred.	4
	Ability to work.	Works in ward.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State $\overline{c}$ ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-
Case 6 (R.C) Aet 24.	Rigidity.	Slight.	Slight^{-}	1/25	Slight^{-}	60	Slight^{-}	50	Slight^{-}	1
	Tremor.	Slight.	No change.	-	Nil.	20	Nil.	20	Nil.	4
	Degree of Bradykinesia.	Slight.	No change.	-	No change.	-	No change.	-	No change.	-
	Gait.	Parkinsonian gait. Leans forward slightly. Swings left arm to excess but does not swing rt.arm.	Walks a little straighter.	1/25	No change.	-	No change.	-	No change.	-
	Salivation.	Excess & dribbles.	Excess does not dribble.	1/75	Slightly dry.(120)	150	Normal.	70	Excess does not dribble.	1
	Vision.	Not blurred.	Not com-plained of.	-	Slightly blurred.	120	Slightly blurred.	70	No change.	-
	Ability to work.	Not working.	Works in ward.	1/75	Works in ward.	20	Works in ward.	20	Works in ward.	1
	Mental State $\overline{c}$ ref. to depression.	V.slight depression.	Not depressed.	1/75	Not depressed.	20	Not depressed.	40	Not depressed	3

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills
Case 7 (A.D) Aet 17.	Rigidity.	Moderate.	Slight	1/100	Nil.	120	Nil.	60	V. slight.	2
	Tremor.	Moderate.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Moderate.	1/100	Slight.	90	Slight.	40	Slight.	2
	Gait.	Marked Parkinsonian gait. Chases centre of gravity. Unsteady on feet. Retropulsion. Stands unaided.	No change.	-	Slightly unsteady on feet. Retropulsion slight.	120	No longer chases centre of gravity. Slightly unsteady on feet. No Retropulsion.	60	No longer chases centre of gravity. Slightly unsteady on feet. No retropulsion.	2
	Salivation.	Excess but does not dribble.	Slightly dry [1/100]	1/100	Slightly dry. (20)	60	Moderately dry. (20)	70	Normal.	2
	Vision.	Not blurred.	Not complained of	-	Slightly blurred.	90	V. blurred.	40	V. blurred.	3
	Ability to work.	Not working.	No change.	-	No change	-	No change	-	No change.	-
	Mental State c ref. to depression.	Moderately depressed.	Not depressed.	1/100	Not depressed.	20	Not depressed.	20	Not depressed.	1
Case 8 (F.D.) Aet 19.	Rigidity.	Moderate.	Arms - Moderate. Legs - Slight.	1/50	Arms - Moderate. Legs - Slight.	90	Arms - Moderate. Legs - Slight.	20	Arms - Moderate. Legs - Slight.	1
	Tremor.	Moderate.	Moderate	1/25	Nil.	150	No change	-	Slight.	4
	Degree of Bradykinesia.	Marked.	No change.	-	No change.	-	No change	-	No change.	-
	Gait.	Cannot walk without support. Leans to left.	Just requires a little support.	1/25	Just requires a little support.	150	Just requires a little support.	60	Just requires a little support.	2
	Salivation.	Excess, dribbles	Normal.	1/75	Normal.	150	Normal.	40	Normal.	4
	Vision.	Not blurred.	Not complained of.	-	No change.	-	Slightly blurred.	40	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyosine Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 9 (R.D) Aet 18.	Rigidity.	Marked.	Arms - Slight. Legs - Moderate.	1/25	Moderate.	90	Moderate.	20	Moderate.	1
	Tremor.	Moderate.	Moderate.	1/25	No change.	-	Moderate.	70	Moderate	4
	Degree of Bradykinesia.	Marked.	No change.	-	Moderate.	40	No change.	-	No change.	-
	Gait.	Leans to rt. Throws rt. foot. Slow Parkinsonian gait. Arms held flexed. Easily pushed over. Retropulsion. Stands unaided but has to be helped to his feet.	Can get to his feet unaided but otherwise no change.	1/150	Can get to his feet unaided but otherwise no change.	20	Can get to his feet unaided but otherwise no change.	20	Can get to his feet unaided but otherwise no change.	1
	Salivation.	Excess, dribbles.	Slightly dry. [1/25]	1/25	Slightly dry. [90]	120	Slightly dry (20).	70	Normal.	1
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	60	Moderately blurred.	70	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	V.depressed.	Slightly depressed.	1/150	Not depressed.	40	Not depressed.	20	No change.	-

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 10 (H.E) Aet 23.	Rigidity.	Moderate.	Moderate	1/25	Arms - Slight. Legs - Moderate.	60	Arms - Slight. Legs - Moderate.	60	No change.	-
	Tremor.	Slight.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	No change.	-	Moderate.	60	No change.	-	No change.	-
	Gait.	Cannot walk. Cannot stand unaided.	Walks in a slow very flexed attitude almost bent to the ground. Can just stand unaided.	1/50	Walks in a slow very flexed attitude almost bent to the ground. Can just stand unaided.	40	Walks in a slow very flexed attitude almost bent to the ground. Can just stand unaided.	20	Walks in a slow very flexed attitude almost bent to the ground. Can just stand unaided.	1
	Salivation.	Excess, dribbles.	Excess, dribbles slightly.	1/50	Moderately dry. [90]	120	Excess, dribbles slightly.	20	Excess, dribbles slightly.	1
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	90	No change.	-	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Slightly depressed occasionally.	Not depressed.	1/50	Not depressed.	90	Slightly depressed occasionally.	70	Not depressed.	4
Case 11 (J.R.F) Aet 61.	Rigidity.	Arms - Slight. Legs - Moderate.	Arms - V. slight. Legs - Slight.	1/150	Arms - V. slight. Legs - Slight.	60	Arms - nil. Legs - Slight.	50	Arms - V. slight. Legs - Slight.	4
	Tremor.	Slight.	V.slight.	1/50	No change.	-	V. slight.	70	Slight	3
	Degree of Bradykinesia.	Marked.	Moderate.	1/150	Moderate.	60	Moderate.	20	Moderate.	1
	Gait.	Walks slowly with great difficulty & only supported.	Walks a little faster, unsupported, & no longer shuffles feet.	1/50	Walks a little faster unsupported & swings rt. arm a little. No longer shuffles feet.	90	Walks a little faster unsupported & swings rt. arm a v.little. No longer shuffles feet.	50	Walks a little faster unsupported.	1
	Salivation.	Slightly dry.	No change.	-	V.dry.	120	V.dry indeed.	70	No change.	-
	Vision.	Not blurred.	Not complained of	-	Moderately blurred.	120	Slightly blurred.	20	Slightly blurred.	1
	Ability to work.	Not working.	Works in ward.	1/150	Works in ward.	20	Works in ward.	20	Works in ward.	1
	Mental State c ref. to depression.	Not depressed	No change.	-	No change.	-	No change.	-	No change.	-

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 12 (W.F.G) Aet 23.	Rigidity.	Moderate.	Arms - Slight. Legs - Moderate.	1/25	Arms - V. slight. Legs - Slight.	150	Arms - V. slight. Legs - Moderate.	50	Arms - V. slight. Legs - Moderate.	2
	Tremor.	Moderate.	Slight.	1/50	Slight.	90	Moderate.	70	Moderate.	4
	Degree of Bradykinesia.	Marked.	No change.	-	Moderate.	60	Slight.	70	Moderate.	1
	Gait.	Leans forward. Does not swing arms which are held flexed. Runs into objects. Retropulsion.	A little steadier, otherwise no change.	1/25	Does not run into objects. Retropulsion v.slight.	60	Does not run into objects. No retropulsion.	60	Does not run into objects. Retropulsion v. slight.	1
	Salivation.	Excess, dribbles.	V.slight dryness (1/50)	1/25	Very dry. (40)	90	Slightly dry (30)	70	Normal.	1
	Vision.	Slightly blurred.	No change.	-	Moderately blurred.	120	No change.	-	Moderately blurred.	4
	Ability to work.	Not working.	No change.	-	Works in ward.	90	Works in ward	20	Works in ward	1
	Mental State c ref. to depression.	V.depressed.	Not depressed.	1/75	Not depressed.	60	Not depressed	30	Not depressed.	3
Case 13 (A.E.G) Aet 28.	Rigidity.	Marked.	Arms - Slight Legs - Moderate.	1/50	Moderate.	60	Moderate.	50	No change.	-
	Tremor.	Slight.	V. slight.	1/150	V. slight.	60	V.slight	50	V. slight.	1
	Degree of Bradykinesia.	Marked.	Moderate.	1/150	Slight.	90	Moderate.	40	Moderate.	3
	Gait.	Slow Parkinsonian gait: leans forward. Arms & body held flexed. Drags feet. Stands unaided.	Slight general improvement.	1/50	Finds walking easier. Does not drag feet. Walks faster. Takes longer strides.	120	No longer drags feet. Walks faster.	60	Does not drag feet quite so much.	2
	Salivation.	Excess, dribbles.	Normal.	1/25	Normal	90	Normal	50	Excess but dribbles less.	4
	Vision.	Not blurred	Not complained of	-	Moderately blurred.	120	Slightly blurred.	30	Slightly blurred.	2
	Ability to work.	Not working	Works in ward.	1/150	Works in ward.	40	Works in ward	20	Works in ward	1
	Mental State c ref. to depression.	Moderately depressed.	Not depressed.	1/50	Not depressed.	90	V.slight depression.	60	No change	-

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 14 (E.G) Aet 38.	Rigidity.	Slight.	Slight⁻	1/150	V. slight.	90	V. slight.	70	V. slight.	4
	Tremor.	Slight tremor left arm only	Nil.	1/75	Nil.	90	Nil.	20	Nil.	1
	Degree of Bradykinesia.	Slight.	Slight⁻	1/150	Slight⁻	40	No change.	-	No change.	-
	Gait.	Parkinsonian gait, leans forward slightly & does not swing arms. Stands unaided	No change.	-	No change.	-	No change.	-	No change	-
	Salivation.	Normal.	Slight dryness.	1/75	V. dry.	60	Slightly dry	70	No change.	-
	Vision.	Not blurred.	Not complained of	-	Slightly blurred.	60	Slightly blurred.	30	Slightly blurred.	2
	Ability to work.	Works in ward	Works in tailor's shop.	1/150	Works in tailor's shop.	60	Works in tailor's shop.	20	Works in tailor's shop.	2
	Mental State c ref. to depression.	Slightly depressed.	Not depressed.	1/150	Not depressed.	20	Not depressed.	20	Not depressed	1
Case 15(H.T.G) Aet 50.	Rigidity.	Arms - Slight. Legs - Moderate.	Arms - V. slight. Legs-Slight	1/150	Arms - Nil Legs - Slight.	40	Arms - Nil. Legs - V. slight.	60	Arms - Nil. Legs - V.slight.	4
	Tremor.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Moderate.	Slight.	1/150	Slight.	40	Slight.	20	Slight	1
	Gait.	Slight Parkinsonian gait. Does not swing arms which are held flexed. Leans forward slightly. Stands unaided.	No change.	-	Swings both arms a little.	90	Swings both arms a very little.	20	Swings both arms a little.	4
	Salivation.	Normal.	No change.	-	Moderately dry.	60	Moderately dry.	60	No change	-
	Vision.	Not blurred.	Not complained of	-	No change.	-	No change.	-	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 16 (S.H) Aet 23.	Rigidity.	Slight.	V. slight.	1/25	V. slight.	90	V. slight.	50	V. slight.	1
	Tremor.	Moderate.	Moderate.	1/150	Slight.	120	Slight.	60	Slight.	2
	Degree of Bradykinesia.	Moderate.	Slight.	1/150	Slight.	90	Slight.	20	Slight.	1
	Gait.	Slow hemiplegic gait. Drags rt. foot. Rt. arm held flexed and exhibits tremor. Stands unaided leans to rt.	Picks up rt. leg better.	1/25	Walks more easily. No longer drags rt. foot.	90	Walks more easily. No longer drags rt. foot.	60	No longer drags rt. foot.	2
	Salivation.	Excess. Dribbles.	Slightly dry.(1/50)	1/25	Moderately dry. (40)	120	V. dry indeed (20)	70	Normal	4
	Vision.	Not blurred	Not complained of	-	No change.	-	Slightly blurred dose to dose.	40	No change	-
	Ability to work.	Not working	Works in ward.	1/150	Works in ward.	90	Works in ward.	20	Works in ward.	1
	Mental State c ref. to depression.	Slightly depressed.	Slightly depressed.	1/25	Not depressed	90	Not depressed.	50	Not depressed.	3

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 17 (E.L.H) Aet 45.	Rigidity.	V. slight.	Nil.	1/150	Nil.	40	Nil.	50	Nil	4
	Tremor.	Slight.	V.slight.	1/50	V. slight.	60	V. slight.	70	No change	-
	Degree of Bradykinesia	Slight.	No change.	-	No change.	-	No change.	-	No change	-
	Gait.	Slight Parkinsonian gait. Leans slightly to rt. Arms held a little flexed. Does not swing them.	No change.	-	V. slight general improvement. Swings rt. arm a very little.	60	V. slight general improvement. Swings arms a very little.	50	V. slight improvement. Swings arms a very little.	1
	Salivation.	Excess, dribbles a little.	Slight excess dribbles a little.	1/100	Slight excess does not dribble	60	Normal.	60	Normal	4
	Vision.	Not blurred.	Not complained of.	-	No change.	-	No change.	-	No change.	-
	Ability to work.	Works in ward.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed	No change.	-	No change.	-	No change.	-	No change.	-
Case 18 (F.H) Aet 18.	Rigidity.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Tremor.	Slight.	V. slight.	1/75	V. slight.	60	Nil.	40	Nil.	1
	Degree of Bradykinesia.	Moderate.	Slight.	1/150	Slight.	40	Slight.	20	Slight.	1
	Gait.	Walks erect & deliberately. Swings arms. Changes step about every 5 or 6 paces. Stands unaided.	No longer changes step.	1/150	No longer changes step.	60	No longer changes step.	30	No longer changes step.	2
	Salivation.	Normal.	No change.	-	Moderately dry.	20	Slightly dry.	30	Slightly dry.	4
	Vision.	Not blurred.	Slightly blurred.	1/150	No change.	-	V. blurred indeed.	40	Slightly blurred.	4
	Ability to work.	Not working	Works in ward.	1/150	Works in ward.	20	Works in ward.	20	Works in ward.	1
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 19 (S.T.K) Aet 18.	Rigidity.	Moderate.	No change.	-	V. slight.	150	Nil.	60	Slight	3
	Tremor.	Slight.	No change.	-	V. slight.	40	Slight	70	Slight	3
	Degree of Bradykinesia.	Marked.	No change.	-	Slight.	90	Moderate.	30	No change.	-
	Gait.	Will not attempt to walk. Lt.leg remains fixed. Falls to left. Has to be helped to his feet but will stand alone once he is given his balance.	Just gets to feet unaided & just walks unaided. Requires to step back occasionally.	1/75	Gets to feet unaided & walks slowly. No longer requires to step back.	150	Gets to feet unaided. Walks unaided in flexed attitude. Requires to step back occasionally.	50	Takes a few steps forward & one back in flexed attitude. Stands unaided.	3
	Salivation.	Excess - does not dribble.	Normal	1/150	Very dry (60)	120	Normal.	40	No change.	-
	Vision.	Not blurred.	Not complained of	-	Moderately blurred.	60	Not complained of.	-	Slightly blurred.	2
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-
Case 20 (W.L) Aet 30.	Rigidity.	V. slight.	No change.	-	Nil.	20	Nil	20	Nil	1
	Tremor.	V. slight.	Nil.	1/75	Nil.	20	Nil.	20	Nil.	1
	Degree of Bradykinesia.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Gait.	Slight suggestion of Parkinsonian gait. Does not swing arms on walking.	Walks more easily. Swings arms.	1/75	Walks more easily & swings arms.	60	No change.	-	No change.	-
	Salivation.	Slight excess.	Normal.	1/75	V. dry [40]	60	V. dry indeed [50]	70	No change.	-
	Vision.	Not blurred.	Not complained of.	-	No change.	-	V.blurred dose to dose	70	No change.	-
	Ability to work.	Not working.	Works in ward.	1/150	Works in ward.	20	Works in ward.	20	No change.	-
	Mental State c ref. to depression.	Moderately depressed.	Slightly depressed.	1/75	Not depressed.	60	Not depressed.	50	No change.	-

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 21 (H.M) Aet 42.	Rigidity.	Moderate.	No change.	-	Slight.	120	Slight.	40	Moderate⁻	3
	Tremor.	Slight.	Slight⁻	1/100	Slight⁻	40	Slight⁻	20	Slight⁻	2
	Degree of Bradykinesia.	Marked.	Moderate.	1/100	Slight.	120	Slight.	40	Slight.	2
	Gait.	Leans forward. Drags feet. Arms held slightly flexed, does not swing them.	No change.	-	Walks a little faster.	120	No change.	-	No change.	-
	Salivation.	Excess, dribbles.	No change.	-	No change.	-	No change.	-	No change.	-
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	120	Moderately blurred.	40	Slightly blurred.	1
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	V.depressed.	Moderately depressed.	1/100	Slightly depressed.	40	Slightly depressed.	20	Slightly depressed.	4
Case 22 (E.M) Aet 21.	Rigidity.	Moderate.	Moderate⁻	1/100	V. slight⁻	120	V. slight.	50	Slight.	3
	Tremor.	Slight.	Slight⁻	1/100	Slight⁻	40	Slight⁻	30	Slight⁻	2
	Degree of Bradykinesia.	Marked.	Moderate.	1/100	Slight.	90	Slight.	60	Moderate.	1
	Gait.	Bent forward slightly. Does not swing arms.	No change.	-	Swings arms.	40	Swings arms.	30	Swings arms.	2
	Salivation.	Excess, dribbles.	Excess, dribbles slightly.	1/25	Normal.	90	V. dry (effect only lasts for 1 hour) [70]	70	Excess, dribbles slightly.	3
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	90	Slightly blurred.	40	Slightly blurred.	2
	Ability to work.	Not working.	No change	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	V.depressed.	Slightly depressed.	1/100	Not depressed.	60	Not depressed.	20	Not depressed.	1

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills
Case 23 (A.G.J.C) Aet 26.	Rigidity.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Tremor.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Gait.	Normal.	No change.	-	No change.	-	No change.	-	No change.	-
	Salivation.	Excess does not dribble.	V.dry ($\frac{1}{150}$)	$\frac{1}{25}$	V.dry (20)	60	V.dry [20]	30	V.dry (1)	2
	Vision.	Not blurred.	Not complained of.	-	No change.	-	No change.	-	No change.	-
	Ability to work.	Works in ward.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State $\overline{c}$ ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-
Case 24 (T.R.P) Aet 23.	Rigidity.	Moderate.	Slight.	$\frac{1}{25}$	V. slight.	150	V. slight.	60	V. slight.	3
	Tremor.	Slight.	Slight	$\frac{1}{25}$	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Moderate.	Slight.	$\frac{1}{150}$	Slight.	60	Slight.	20	Slight.	1
	Gait.	Parkinsonian gait. Flexed attitude. Stamps left foot & drags right. Does not swing arms.	Swings arms a little.	$\frac{1}{25}$	Swings arms a little.	40	Swings arms a very little.	20	No change.	-
	Salivation.	Excess & dribbles at times.	Moderate dryness ($\frac{1}{150}$)	$\frac{1}{25}$	V.dry [40]	120	V.dry (20)	70	V. slight dryness (1)	4
	Vision.	Not blurred.	Not complained of.	-	Moderately blurred.	120	Slightly blurred from dose to dose.	70	V. slightly blurred.	3
	Ability to work.	Not working.	Works in ward.	$\frac{1}{25}$	Works in ward.	90	Works in ward.	20	Works in ward.	1
	Mental State $\overline{c}$ ref. to depression.	Moderately depressed.	Not depressed.	$\frac{1}{25}$	Not depressed.	60	Not depressed.	30	Slightly depressed.	1

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 25 (W.A.S) Aet 28.	Rigidity.	Arms - Slight. Legs - Moderate.	No change.	-	Slight.	120	No change.	-	No change.	-
	Tremor.	Slight.	Slight	1/150	V. slight.	150	V. slight.	50	No change	-
	Degree of Bradykinesia.	Slight.	No change.	-	No change.	-	No change.	-	No change.	-
	Gait.	Rapid Parkinsonian gait. Does not swing arms which are held flexed.	Walks a little easier.	1/25	No change.	-	Swings left arm just a very little.	30	No change.	-
	Salivation.	Normal.	Moderately dry.	1/50	Very dry indeed.	90	V. dry.	50	No change.	-
	Vision.	Not blurred.	Slightly blurred.	1/25	Markedly blurred.	90	Moderately blurred.	40	Slightly blurred.	2
	Ability to work.	Works in upholsterers shop.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-
Case 26 (J.W.S) Aet 20.	Rigidity.	V. slight.	No change.	-	Nil.	150	Nil.	70	Nil.	4
	Tremor.	Slight.	No change.	-	V. slight.	150	V. slight.	30	V. slight.	4
	Degree of Bradykinesia.	Marked.	Slight.	1/100	Slight.	90	Slight.	40	Slight.	2
	Gait.	Does not attempt to walk but not through inability. Falls to the floor.	Walks at times, hops on one leg.	1/100	Walks faster & swings both arms.	150	Walks faster & swings both arms.	60	Walks. At times hops on one leg.	1
	Salivation.	Excess & dribbles to some extent.	Normal.	1/75	Slightly dry.(20)	120	V. dry[30]	60	No change.	-
	Vision.	Not blurred.	Not complained of.	-	No change.	-	Slightly blurred.	40	No change.	-
	Ability to work.	Not working.	Works in ward.	1/25	Works in ward.	120	No change.	-	No change.	-
	Mental State c ref. to depression.	V. depressed at times.	Not depressed.	1/100	Not depressed.	40	Not depressed.	30	Not depressed.	1

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 27 (C.J.T) Aet 35.	Rigidity.	Slight.	Nil.	1/150	Nil.	90	Nil	50	V. slight.	4
	Tremor.	V. slight.	Nil.	1/150	Nil.	20	Nil.	20	Nil.	2
	Degree of Bradykinesia.	Moderate.	Slight.	1/150	Slight.	40	Slight.	20	Slight.	1
	Gait.	Moderate Parkinsonian gait. Does not swing arms. Stands unaided.	Swings rt. arm a little.	1/25	Swings rt. arm a little.	120	Swings rt. arm a very little.	20	No change.	-
	Salivation.	Excess, dribbles.	Slightly dry (1/150)	1/25	Normal.	20	Normal.	20	Normal.	1
	Vision.	Not blurred.	Not complained of.	-	No change.	-	Slightly blurred.	40	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	V. depressed.	Slightly depressed.	1/150	No change.	-	No change.	-	Slightly depressed.	4
Case 28 (E.H.T) Aet 37.	Rigidity.	Slight.	V. slight.	1/100	V. slight.	60	V. slight.	20	V. slight.	1
	Tremor.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Slight.	V. slight.	1/100	No change.	-	V. slight.	60	No change.	-
	Gait.	Drags left leg, but not markedly.	Only drags left leg very slightly.	1/100	Only drags left leg very slightly.	40	Only drags left leg very slightly.	20	Only drags left leg very slightly.	2
	Salivation.	Normal.	V. dry.	1/50	V. dry	60	V. dry indeed.	70	No change.	-
	Vision.	Not blurred.	Not complained of.	-	Moderately blurred.	90	No change.	-	No change.	-
	Ability to work.	Works in ward.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-

Series A.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine. Hydrobrom.	Dose gr.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 29 (R.W) Aet 48.	Rigidity.	Marked.	Moderate.	1/150	Slight.	120	Moderate.	20	Moderate.	2
	Tremor.	Slight.	No change.	-	V. slight.	90	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Moderate.	1/150	Slight.	90	Moderate.	20	Moderate.	1
	Gait.	Parkinsonian gait. Walks in flexed attitude with arms held flexed. Drags feet.	No change.	-	Walks faster & easier. Swings rt. arm a very little. Does not drag feet.	150	Walks easier & faster & does not drag feet.	70	Walks easier & faster & does not drag feet.	4
	Salivation.	Excess & dribbles.	Normal.	1/75	V. dry [90]	90	Normal	20	Normal	1
	Vision.	Not blurred.	Not complained of.	-	Moderately blurred.	150	Slightly blurred all day dose to dose.	50	No change.	-
	Ability to work.	Not working.	Works in ward.	1/150	Works in ward.	40	Works in ward.	20	Works in ward.	1
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-
Case 30 (H.G.W) Aet 21.	Rigidity.	Slight.	V. slight.	1/25	V. slight⁻	40	V. slight⁻	40	V. slight⁻	3
	Tremor.	Slight.	Slight⁻	1/50	Slight⁻	60	Slight⁻	50	Slight⁻	2
	Degree of Bradykinesia.	Marked.	Slight.	1/100	Slight.	40	Slight.	30	Slight.	2
	Gait.	Slow Parkinsonian gait. Scrapes feet on ground. Arms held flexed.	Swings arms a little.	1/50	Swings arms a little & no longer scrapes feet.	60	Swings arms a little & no longer scrapes feet.	40	No longer scrapes feet.	2
	Salivation.	Excess & dribbles.	Slightly dry (1/75)	1/50	Markedly dry [20]	120	Moderately dry [20]	50	Normal (2)	2
	Vision.	Not blurred.	Not complained of.	-	No blurred vision.	-	V.blurred all day.	40	Slightly blurred.	4
	Ability to work.	Not working.	Works in ward.	1/100	Works in ward.	40	Works in ward.	40	Works in ward.	1
	Mental State c ref. to depression.	V.depressed.	V.slightly depressed.	1/50	Not depressed.	90	Not depressed.	30	Slightly depressed.	1

Series A.
Females.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose. gr.	Tr. Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 31 (A.A) Aet 20.	Rigidity.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Tremor.	Nil.	No change	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Moderate.	Slight.	1/150	Slight.	40	Slight	20	Slight	4
	Gait.	Mild Parkinsonian gait. Does not swing arms.	Swings rt. arm a little.	1/75	Swings rt. arm a very little.	20	Swings rt. arm a very little.	50	No change.	-
	Salivation.	Normal.	No change.	-	No change.	-	No change.	-	No change.	-
	Vision.	Not blurred.	Not complained of.	-	No change.	-	No change.	-	No change.	-
	Ability to work.	Works in ward.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State. c ref. to depression.	Apathetic.	No change.	-	No change.	-	No change.	-	No change.	-
Case 32 (D.A) Aet 37.	Rigidity.	Slight.	V. slight.	1/25	V.slight.	40	V. slight.	40	V. slight.	2
	Tremor	Slight.	Nil.	1/50	Nil.	40	Nil.	20	Nil.	1
	Degree of Bradykinesia.	Slight.	No change.	-	No change.	-	No change.	-	No change.	-
	Gait.	Slight Parkinsonian gait. Does not swing arms.	Slight Parkinson gait. —	1/25	Swings left arm a very little.	20	Swings left arm a very little.	30	Swings left arm a little.	3
	Salivation.	Normal.	V. dry	1/25	V. dry.	120	Moderately dry.	70	No change.	-
	Vision.	Not blurred.	Not complained of.	-	Moderately blurred.	120	Moderately blurred.	60	Slightly blurred.	2
	Ability to work.	Works in ward.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Slightly depressed at times.	Not depressed.	1/25	No change.	-	No change.	-	No change.	-

Series A.
Females.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 33 (E.B) Aet 16.	Rigidity.	Moderate.	Moderate	1/75	V. slight.	90	V. slight.	70	Slight.	4
	Tremor.	Slight.	No change.	-	V. slight.	90	No change.	-	Slight.	4
	Degree of Bradykinesia.	Marked.	Moderate.	1/75	Slight.	90	Moderate.	70	No change.	-
	Gait.	Marked Parkinsonian gait. Does not swing arms. Retropulsion.	No retropulsion.	1/75	No retropulsion.	40	No retropulsion.	40	Swings left arm a little. No retropulsion.	3
	Salivation.	Excess, dribbles.	Moderately dry. [1/25]	1/25	No change.	-	Moderately dry. [70]	40	No change.	-
	Vision.	Slightly blurred.	No change.	-	Very blurred from dose to dose.	90	Very blurred from dose to dose.	50	No change.	-
	Ability to work.	Not working.	No change.	-	Works in ward.	90	Works in ward.	40	No change.	-
	Mental State c ref. to depression.	Slightly depressed at times.	No change.	-	Not depressed.	90	No change.	-	No change.	-
Case 34 (W.M.E) Aet 20.	Rigidity.	Slight.	Nil.	1/50	Nil	60	Nil	40	Nil	4
	Tremor.	Slight.	Nil.	1/50	Nil.	20	Nil.	40	Nil	4
	Degree of Bradykinesia.	Marked.	Slight.	1/150	V. Slight.	90	V. slight.	70	Slight.	2
	Gait.	Moderate Parkinsonian gait. Does not swing arms. Slight retropulsion.	Walks more easily.	1/50	V. slight Parkinsonian gait. Swings arms. No retropulsion.	60	Swings arms. Slight Parkinsonian gait. No retropulsion.	40	Slight Parkinsonian gait. No retropulsion.	4
	Salivation.	Slight excess.	Very dry. (1/150)	1/25	Moderately dry. (20)	90	Slightly dry. [40]	40	Normal	3
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	20	Slightly blurred.	40	No change.	-
	Ability to work.	Not working.	Works in ward.	1/150	Works in ward.	20	Works in ward.	20	Works in ward.	1
	Mental State c ref. to depression.	Slightly depressed at times.	No depression.	1/100	No depression.	20	No depression.	30	No depression	3

Series A.
Females.

se Number Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
e 35 (E.H.) t 43.	Rigidity.	Marked.	No change.	-	Moderate.	40	Moderate	50	No change.	-
	Tremor.	Slight.	No change.	-	V. slight.	90	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	No change.	-	No change.	-	No change.	-	No change.	-
	Gait.	Only walks with great difficulty when supported. Flexed attitude.	No change.	-	Marked Parkinsonian gait. Walks without support. Stands unsupported.	120	Will walk without support but tends to chase centre of gravity. Flexed attitude. Retropulsion. Cannot stand still unaided.	50	No change.	-
	Salivation.	Excess, dribbles.	Excess, only dribbles a little.	1/25	Moderately dry. (40)	90	Excess, only dribbles a little.	30	Excess, only dribbles a little.	4
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	90	Slightly blurred.	40	No change	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Slightly depressed at times.	No change.	-	Not depressed.	120	No change.	-	Not depressed.	2
e 36 (R.J) t 32.	Rigidity.	Slight.	Slight.-	1/25	V. slight.	90	V. slight.	70	V. slight.	4
	Tremor.	Slight.	V. slight.	1/25	Nil.	120	No change.	-	Nil	3
	Degree of Bradykinesia.	Slight.	No change.	-	No change.	-	No change.	-	No change.	-
	Gait.	Mild Parkinsonian gait. Does not swing left arm.	No change.	-	No change.	-	No change.	-	No change.	-
	Salivation.	Excess, dribbles at times.	Normal.	1/150	Moderately dry. (60)	120	Normal	20	Normal	1
	Vision.	Not blurred.	Not complained of.	-	Moderately blurred.	90	Moderately blurred.	70	No change.	-
	Ability to work.	Unemployed	Does a little dusting at times.	1/150	Works in ward.	20	No change.	-	Works in ward.	1
	Mental State c ref. to depression.	V. depressed	No depression.	1/25	No depression.	90	No depression.	60	Not depressed.	1

Series A.
Females.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills
Case 37 (R.L) Aet 49.	Rigidity.	Slight.	Slight⁻	1/50	V. slight.	60	Nil.	70	Slight⁻	2
	Tremor.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Slight.	No change.	-	No change.	-	No change.	-	No change.	-
	Gait.	Moderate Parkinsonian gait. Slow. Does not swing left arm.	No change.	-	Slight Parkinsonian gait. Walks a little faster.	90	Walks a little faster.	20	No change.	-
	Salivation.	Excess, & dribbles a little.	V. dry. (1/150)	1/25	V. dry. (40)	60	V. dry from dose to dose. (20)	60	Normal.	1
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	90	Slightly blurred.	40	No change.	-
	Ability to work.	Works in dormitory.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	V.depressed.	Slightly depressed.	1/150	No change.	-	Slightly depressed.	20	No change.	-
Case 38 (M.L) Aet 19.	Rigidity.	Moderate.	Moderate.	1/25	V. slight.	150	Slight.	70	Moderate.	4
	Tremor.	Slight.	No change.	-	Slight.⁻	150	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Moderate.	1/75	Slight.	120	Moderate.	40	Moderate.	3
	Gait.	Will not attempt to walk.	Walks in a flexed bent up attitude. Does not fall to ground but unsteady. Does not swing arms.	1/75	Walks in a flexed attitude. Does not fall to ground. Fairly steady. Walks easier. Swings rt. arm.	150	Walks in flexed attitude. Does not fall to ground but unsteady. Does not swing arms.	40	Walks in a flexed attitude. Marked Parkinsonian gait. Does not fall to ground but unsteady. Does not swing arm.	1
	Salivation.	Excess, dribbles.	Normal.	1/25	Normal.	40	Normal	30	Does not dribble. Excess slight.	4
	Vision.	Not blurred.	Not complained of.	-	Not complained of.	-	Slightly blurred.	60	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Moderately depressed.	No depression.	1/25	No depression.	120	No depression.	40	No change.	-

Series A.
Females.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills
Case 39 (L.M) Aet 37.	Rigidity.	Moderate.	Arms - nil. Legs - V. slight.	1/25	Arms - nil. Legs - V. slight.	60	Arms - nil. Legs - V. slight.	40	Arms - nil. Legs - V. slight.	3
	Tremor.	Slight.	Slight.—	1/75	Slight.—	60	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Moderate.	1/75	Slight.	60	Moderate.	60	No change.	-
	Gait.	Marked Parkinsonian gait. Falls to floor. Cannot walk unsupported.	Walks unaided. Leans forward. Drags rt. foot. Retropulsion less marked.	1/75	Walks unaided and more erect. Does not fall. Does not drag rt. foot. Swings left arm a very little. No retropulsion.	60	Walks unaided and more erect. Does not fall. No retropulsion.	60	Does not fall to floor. Retropulsion less marked.	4
	Salivation.	Excess, dribbles.	No change.	-	Slightly dry. (60)	150	Slight excess does not dribble.	70	No change.	-
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	60	Moderately blurred.	40	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State ℄ ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-
Case 40 (A.M) Aet 34.	Rigidity.	Moderate.	Arms - nil. Legs - Slight.	1/25	Arms - nil. Legs - Slight.	120	Arms - nil. Legs - Slight.	70	Arms - V. slight. Legs - Moderate.	3
	Tremor.	Nil.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Moderate.	Slight.	1/100	Slight.	40	Slight.	20	Slight.	2
	Gait.	Mild Parkinsonian gait does not swing arms.	Swings both arms a very little.	1/25	Swings both arms a little.	120	Swings left arm a very little.	50	Now moves rt. arm a little.	4
	Salivation.	Slight excess, dribbles.	Slight excess. Does not dribble.	1/25	Slight excess does not dribble.	20	No change.	-	Normal.	4
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	60	Moderately blurred.	30	Slightly blurred.	2
	Ability to work.	Works in ward.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State ℄ ref. to depression.	V. depressed.	Slightly depressed.	1/100	No depression.	40	Slightly depressed.	50	Slightly depressed.	2

Series A.
Females.

Case Number & Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
Case 41 (C.P) Aet 47.	Rigidity.	Marked.	Marked⁻	1/150	Moderate.	150	Moderate.	70	Marked⁻	2
	Tremor.	Moderate.	Slight.	1/25	Slight.	150	Slight.	70	Moderate.	2
	Degree of Bradykinesia.	Marked.	Moderate.	1/150	Slight.	150	Moderate.	20	Moderate.	2
	Gait.	Parkinsonian gait. Trots. Bent forward attitude. Retropulsion.	No change.	-	No retro-pulsion.	150	No retro-pulsion.	60	No retro-pulsion.	2
	Salivation.	Normal.	No change.	-	No change.	-	Slightly dry.	40	No change.	-
	Vision.	Not blurred.	Not com-plained of.	-	Moderately blurred.	90	Slightly blurred.	20	Slightly blurred.	2
	Ability to work.	Not working.	No change.	-	Works in ward.	60	Works in ward.	20	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-
Case 42 (A.R) Aet 36.	Rigidity.	Marked.	Arms - Nil. Legs - Slight.	1/25	Arms - Slight. Legs - Moderate.	40	Moderate.	30	Moderate.	4
	Tremor.	Marked.	Slight.	1/75	V. slight.	90	No change.	-	Slight.	4
	Degree of Bradykinesia.	Marked.	Slight.	1/75	Slight.	60	Moderate.	30	Moderate.	3
	Gait.	Marked Parkinsonian gait. Leans forward. Does not swing arms. Retropulsion.	Moderate Parkinsonian gait. No retropulsion.	1/75	Slight Parkinsonian gait. No retropulsion.	150	Moderate Parkinsonian gait. No retropulsion.	60	Slight Parkin-sonian gait. No retro-pulsion.	4
	Salivation.	Excess, dribbles.	No change.	-	Slight ex-cess does not dribble.	90	No change.	-	No change.	-
	Vision.	Not blurred.	Not com-plained of.	-	V. blurred.	90	Moderately blurred.	20	Slightly blurred.	2
	Ability to work.	Not working.	Works in ward.	1/75	Works in ward.	20	Works in ward.	20	Works in ward.	4
	Mental State c ref. to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-

Series A.
Females.

se Number Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
se 43 (K.A.S) et 26.	Rigidity.	Marked.	Slight.	1/25	Slight.	90	Moderate.	20	Moderate.	4
	Tremor.	Moderate.	Moderate⁻	1/25	Slight.	150	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Moderate.	1/150	Moderate.	60	Moderate.	70	Moderate.	3
	Gait.	Marked Parkinsonian gait. Leans forward. Requires assistance. Retropulsion.	No longer requires assistance, No retropulsion.	1/150	No longer requires assistance. No retropulsion.	60	No longer requires assistance. No retropulsion.	40	No longer requires assistance. No retropulsion.	2
	Salivation.	Excess, dribbles.	Moderately dry. [1/75]	1/25	V. dry (20)	90	V. dry (20)	70	Normal.	2
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	90	Slightly blurred.	70	Slightly blurred.	4
	Ability to work.	Not working.	Works in ward.	1/25	Works in ward.	120	Works in ward.	20	No change.	-
	Mental State c ref. to depression.	V. depressed.	Not depressed.	1/100	Not depressed	20	Not depressed.	20	Not depressed.	2
se 44 (O.M.W) et 45.	Rigidity.	Arms - Slight. Legs - Moderate.	Slight.	1/50	Arms - V. slight. Legs - Slight.	150	Arms - V. slight. Legs - Moderate.	30	Arms - V.slight. Legs - Moderate.	4
	Tremor.	Slight.	Nil.	1/25	Nil.	120	Nil.	20	Nil.	1
	Degree of Bradykinesia.	Moderate.	No change.	-	Slight.	120	Slight.	20	Slight.	2
	Gait.	Walks in very bent up & flexed attitude almost to ground.	Not so flexed.	1/75	Not so flexed. Lifts feet better.	150	Not so flexed.	20	Not so flexed.	2
	Salivation.	Excess, dribbles.	Excess, dribbles less.	1/75	V.dry [40]	150	Slightly dry [40]	40	No change.	-
	Vision.	Not blurred.	Not complained of.	-	Slightly blurred.	90	V.blurred vision.	50	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-	No change.	-	No change.	-
	Mental State c ref. to depression.	Not depressed.	No change.	-	Not depressed.	-	No change.	-	No change.	-

Series A.
Females.

ase Number t Age.	Manifestations.	Without Drugs.	Hyoscine Hydrobrom.	Dose gr.	Tr Stramonii.	Dose m.	Tr Belladonnae.	Dose m.	Genoscopolamine.	Dose Pills.
ase 45 (V.W) et 20.	Rigidity.	Marked.	Arms - Moderate. Legs - Marked.	1/25	Moderate.	150	Arms - Moderate. Legs - Marked.	30	Arms - Moderate. Legs - Marked.	3
	Tremor.	Slight.	No change.	-	No change.	-	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	No change.	-	Moderate.	120	Moderate.	70	No change.	-
	Gait.	Will not attempt to walk. Has to be supported.	Marked Parkinsonian gait. Stands unaided. Drags rt. foot. Retro-pulsion.	1/75	Marked Parkinsonian gait. Stands unaided. Retropulsion v. slight.	120	Marked Parkinsonian gait. Stands unaided. Retropulsion v. slight.	60	Marked Parkin-sonian gait. Stands unaided. Drags rt. foot. Retropulsion.	3
	Salivation.	Excess, dribbles.	Normal.	1/75	Normal.	20	Normal.	20	Normal.	2
	Vision.	No blurred vision.	Not com-plained of.	-	Moderately blurred.	90	V. blurred dose to dose.	50	Slightly blurred dose to dose.	4
	Ability to work.	Does not work.	Works in ward.	1/25	Works in ward.	120	No change.	-	No change.	-
	Mental State ϖ special reference to depression.	Not depressed.	No change.	-	No change.	-	No change.	-	No change.	-

Case Number & Age.	Manifestations.	Without Drugs.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.
Case 46 (W.C) Aet 52.	Rigidity.	Moderate	V. slight.	90	V. slight.	50
	Tremor.	Nil.	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Slight.	90	Slight.	40
	Gait.	Parkinsonian gait. Arms held flexed in front of body.	Swings left arm a very little.	120	No change.	-
	Salivation.	Excess dribbles at times.	Excess. Dribbles v. slightly.	90	No change.	-
	Vision.	Not blurred.	No change.	-	Slightly blurred.	40
	Ability to work.	Not working.	No change.	-	No change.	-
	Mental State $\overline{c}$ ref.to depression	Not depressed.	No change.	-	No change.	-
Case 47 (W.T.S) Aet 20.	Rigidity.	Slight.	Nil.	150	V. slight.	50
	Tremor.	Slight.	V. slight.	120	Slight	70
	Degree of Bradykinesia.	Marked.	Slight.	60	Slight.	30
	Gait.	Parkinsonian gait does not swing arms. Drags rt. foot. Leans forward. Slight retropulsion.	Walks faster & swings arms a little. No retropulsion.	150	No retro-pulsion.	30
	Salivation.	Excess, dribbles at times.	Slightly dry (60)	120	Slightly dry [70]	70
	Vision.	Not blurred.	Slightly blurred.	60	Slightly blurred.	40
	Ability to work.	Not working.	Works in Ward.	120	Works in ward.	30
	Mental State $\overline{c}$ ref.to depression.	Not depressed.	No change.	-	No change.	-
Case 48 (J.S) Aet 19.	Rigidity.	Slight.	V. slight.	90	V. slight.	50
	Tremor.	Slight.	Slight	90	V. slight.	60
	Degree of Bradykinesia.	Marked.	Slight.	60	Slight.	30
	Gait.	Parkinsonian gait. Does not swing arms. Latero & retropulsion.	No retro- or latero-pulsion.	90	No retro or latero-pulsion.	40
	Salivation.	Excess, dribbles.	Slightly dry (40)	90	V. dry [30]	50
	Vision.	Not blurred.	Moderately blurred.	90	Moderately blurred.	50
	Ability to work.	Not working.	No change.	-	No change.	-
	Mental State $\overline{c}$ ref.to depression.	Moderately depressed.	V. slightly depressed.	90	Not depressed.	60

Series B.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.
Case 49 (J.W.B) Aet 16.	Rigidity.	Moderate.	Moderate	60	No change.	-
	Tremor.	Nil.	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Slight.	90	Slight.	70
	Gait.	Parkinsonian gait. Walks supported. Cannot walk alone, runs forward. Arms held flexed. Flexed attitude.	Swings rt. arm. Does not drag left foot. No retropulsion. Walks unsupported.	90	Swings rt. arm & does not drag feet. Retropulsuon v. slight. Walks unsupported.	60
	Salivation.	Excess, dribbles.	Slightly dry (40)	90	Normal.	50
	Vision.	Not blurred.	No change.	-	Slightly blurred.	40
	Ability to work.	Not working.	No change.	-	No change.	-
	Mental State c ref.to depression.	Not depressed.	No change.	-	No change.	-
Case 50 (H.J.F.C) Aet 24.	Rigidity.	Moderate.	V. slight.	60	V. slight.	50
	Tremor.	Moderate.	V. slight.	90	Slight.	50
	Degree of Bradykinesia.	Marked.	Slight.	90	Slight.	30
	Gait.	Bent up Parkinsonian gait. Flexed almost to ground. Drags rt. foot. Does not swing rt. arm.	Does not drag rt. foot. Walks more erect, but leans to right.	150	Does not drag rt. foot. Walks more erect, but leans to right.	30
	Salivation.	Excess, dribbles.	Normal.	120	Normal.	50
	Vision.	Not blurred.	Slightly blurred.	90	Slightly blurred.	40
	Ability to work.	Not working.	Does a little ward work.	120	Does a little ward work.	60
	Mental State c ref.to depression.	Not depressed.	No change.	-	No change.	-
Case 51 (A.P) Aet 28.	Rigidity.	Moderate.	Slight.	60	Slight.	40
	Tremor.	Moderate.	Moderate	90	No change.	-
	Degree of Bradykinesia.	Moderate.	Slight.	90	Slight.	30
	Gait.	Slow Parkinsonian gait. Drags left foot. Does not swing left arm.	Walks a little faster & does not drag left foot.	90	Walks a little faster & does not drag left foot.	60
	Salivation.	Excess & dribbles a little.	V. dry (20)	120	Moderately dry (20)	40
	Vision.	Slightly blurred.	No change.	-	No change.	-
	Ability to work.	Not working.	Works in ward.	20	Works in ward.	20
	Mental State c ref.to depression.	Moderately	Not depressed.	20	Not depressed.	30

Series B.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.
Case 52 (C.W) Aet 24.	Rigidity.	Marked.	Arms - Slight. Legs - Moderate.	60	Arms - Slight. Legs - Moderate.	70
	Tremor.	Moderate.	Slight.	90	Slight.	60
	Degree of Bradykinesia.	Marked.	No change.	-	No change.	-
	Gait.	Walks backwards. Falls on his knees when walking forwards.	Can take several steps forward before falling on his knees.	90	Can take several steps forward before falling on his knees.	30
	Salivation.	Excess, dribbles.	Excess, dribbles less.	90	Normal	20
	Vision.	Slightly blurred.	No change.	-	No change.	-
	Ability to work.	Not working.	No change.	-	No change.	-
	Mental State c ref.to depression.	Slightly depressed.	No change.	-	No change.	-
Case 53 (J.H.N) Aet 23.	Rigidity.	Moderate.	V.Slight.	120	Slight.	30
	Tremor.	Slight.	V. slight.	150	Nil.	60
	Degree of Bradykinesia.	Marked.	Slight.	90	Slight.	50
	Gait.	Parkinsonian gait. Drags feet a little. Leans forward slightly. Does not swing arms. Retropulsion.	Walks faster. Swings both arms a very little. Does not drag feet. No retropulsion.	90	Does not drag feet. No retropulsion.	40
	Salivation.	Excess, dribbles.	Normal.	120	Normal.	70
	Vision.	Not blurred.	Moderately blurred.	120	Slightly blurred.	40
	Ability to work.	Not working.	Works in ward.	40	Works in ward.	20
	Mental State c ref.to depression.	V. depressed.	Not depressed.	40	V. slight depression.	30.
Case 54 (F.S) Aet 21.	Rigidity.	Slight.	V. slight.	120	V. slight.	70
	Tremor.	Slight.	V. slight.	120	Nil.	20
	Degree of Bradykinesia.	Moderate.	V. slight.	120	V. slight.	60
	Gait.	Hemiplegic. Drags left foot & swings rt. arm to excess.	Drags left foot less.	120	No change.	-
	Salivation.	Normal.	V. dry.	90	Moderately dry.	70
	Vision.	Not blurred.	Slightly blurred.	60	Moderately blurred.	70
	Ability to work.	Works in ward.	No change.	-	No change.	-
	Mental State c ref.to depression.	Moderately depressed.	Not depressed.	20	Not depressed.	20

Series B.
Males.

Case Number & Age.	Manifestations.	Without Drugs.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.
Case 55 (S.G.W) Aet 22.	Rigidity.	Moderate.	V. slight.	90	Slight.	20
	Tremor.	Slight.	V. slight.	150	No change.	-
	Degree of Bradykinesia.	Moderate.	Slight.	40	Slight.	20
	Gait.	Moderate Parkinsonian gait. Leans forward slightly. Does not swing arms.	Slight Parkinsonian gait. Walks easier & faster.	90	No change.	-
	Salivation.	Excess, dribbles.	V. slight excess. Does not dribble.	90	No change.	-
	Vision.	Not blurred.	Slightly blurred.	120	Slightly blurred.	20
	Ability to work.	Not working.	Works in upholsterers shop.	20	Works in ward.	20
	Mental State $\overline{c}$ ref. to depression.	Moderately depressed at times.	Slightly depressed at times.	40	No change.	-
Case 56 (H.W) Aet 21.	Rigidity.	Slight.	V. slight.	90	Slight^{-}	50
	Tremor.	Slight.	V. slight.	60	No change	-
	Degree of Bradykinesia.	Marked.	Slight.	60	Moderate.	40
	Gait.	Slow Parkinsonian gait. Does not swing arms. Retropulsion.	V. slight, general improvement.	20	No change.	-
	Salivation.	Excess & dribbles slightly.	V. dry (20)	150	V. dry [20]	20
	Vision.	Not blurred.	V. blurred.	120	Slightly blurred.	20
	Ability to work.	Not working.	Works in ward.	20	No change.	-
	Mental State $\overline{c}$ ref.to depression.	Moderately depressed at times.	Not depressed.	40	No change.	-

Series B.
Females.

Case Number & Age.	Manifestations.	Without Drugs.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.
Case 57 (M.C) Aet 40.	Rigidity.	Marked.	Slight	90	V. slight.	70
	Tremor.	Nil.	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Slight.	150	Slight.	50
	Gait.	Moderate Parkinsonian gait. Does not swing arms, which are held in front flexed.	No change.	-	No change.	-
	Salivation.	Excess, dribbles a little.	Normal.	20	Normal.	20
	Vision.	Not blurred.	No change.	-	No change.	-
	Ability to work.	Works in ward.	No change	-	No change.	-
	Mental State $\overline{c}$ ref.to depression.	Not depressed.	No change.	-	No change.	-
Case 58 (G.D) Aet 39.	Rigidity.	Slight.	Nil.	120	Nil.	40
	Tremor.	Moderate.	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Slight.	150	Slight.	30
	Gait.	Slight Parkinsonian gait. Does not swing arms.	Walking a little more easily. Less stiff.	40	No change.	-
	Salivation.	Excess & dribbles.	V. slight excess only dribbles a very little.	150	No change.	-
	Vision.	Not blurred.	Moderately blurred.	90	Moderately blurred.	40
	Ability to work.	Not working.	Works in ward.	90	Works in ward.	20
	Mental State $\overline{c}$ ref.to depression.	Slightly depressed.	Not depressed.	20	Not depressed.	20
Case 59 (E.C.D) Aet 38.	Rigidity.	Moderate.	Arms - V.slight. Legs - Slight.	60	Slight.	70
	Tremor.	Slight.	V. slight.	120	Nil.	60
	Degree of Bradykinesia.	Marked.	Moderate.	40	Moderate.	70
	Gait.	Marked Parkinsonian gait. Leans forward. Drags feet. Does not swing arms.	Moderate Parkinsonian gait. Does not drag feet.	90	Does not drag feet so much.	60
	Salivation.	Excess, dribbles.	Excess, only dribbles occasionally.	90	No change.	-
	Vision.	Moderately blurred.	No change.	-	V. blurred.	30
	Ability to work.	Not working.	No change.	-	No change.	-
	Mental State $\overline{c}$ ref.to depression.	Moderately depressed.	Not depressed.	60	Not depressed.	70

Series B.
Females.

Case Number & Age.	Manifestations.	Without Drugs.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.
Case 60 (C.A.R.G) Aet 23.	Rigidity.	Slight.	V. slight.	120	Slight	60
	Tremor.	Slight.	V. slight.	120	Slight	70
	Degree of Bradykinesia.	Marked.	No change.	-	No change.	-
	Gait.	Unsteady, has to be supported. Will take a few steps but not alone.	Walks unsupported. Does not fall. Walks more erect.	90	Will walk unsupported in flexed attitude, arms shake.	20
	Salivation.	Excess, dribbles.	Excess, dribbles a very little.	150	No change.	-
	Vision.	Not blurred.	No change.	-	Slightly blurred.	30
	Ability to work.	Not working.	No change.	-	No change.	-
	Mental State c ref.to depression.	V. depressed.	Not depressed.	90	Slightly depressed.	70
Case 61 (A.M) Aet 41.	Rigidity.	V. slight.	No change.	-	No change.	-
	Tremor.	V. slight.	Nil.	120	Nil.	20
	Degree of Bradykinesia.	Marked.	Slight.	150	Slight.	70
	Gait.	Moderate Parkinsonian gait. Leans forward, does not swing arms.	Walks a little faster.	120	No change.	-
	Salivation.	Excess, dribbles.	Excess, but dribbles very little.	120	No change.	-
	Vision.	Not blurred.	Slightly blurred.	90	V. blurred.	70
	Ability to work.	Not working.	No change.	-	No change.	-
	Mental State c ref.to depression.	Slightly depressed.	Not depressed.	20	Not depressed.	20
Case 62 (E.P) Aet 20.	Rigidity.	Slight.	V. slight.	150	V. slight.	70
	Tremor.	Moderate.	V. slight.	150	V. slight.	60
	Degree of Bradykinesia.	Moderate.	Slight.	40	Slight.	20
	Gait.	Slight Parkinsonian gait. Tremor of left arm. Swings right arm.	No change.	-	No change.	-
	Salivation.	Excess, dribbles a little.	Normal.	40	Slightly dry.(40)	50
	Vision.	Not blurred.	Slightly blurred.	60	Slightly blurred.	70
	Ability to work.	Works in ward.	No change.	-	No change.	-
	Mental State c ref.to depression.	V. depressed.	Not depressed.	120	Not depressed.	50

Series B.
Females.

Case Number & Age.	Manifestations.	Without Drugs.	Tr. Stramonii.	Dose m.	Tr. Belladonnae.	Dose m.
Case 63 (L.P) Aet 21.	Rigidity.	Slight.	Nil.	150	V. slight.	30
	Tremor.	Slight.	Nil.	20	Nil.	40
	Degree of Bradykinesia.	Moderate.	Nil.	90	Nil.	50
	Gait.	Mild Parkinsonian gait. Does not swing left arm.	Swings left arm a very little.	40	Swings left arm a very little.	20
	Salivation.	Excess, dribbles a little.	Normal.	20	Normal.	30
	Vision.	Not blurred.	Slightly blurred.	90	Slightly blurred.	30
	Ability to work.	Not working.	Works in ward.	20	Works in ward.	20
	Mental State c ref.to depression.	Not depressed.	No change.	-	No change.	-
Case 64 (A.T). Aet 42.	Rigidity.	Moderate.	V. slight.	120	V. slight.	60
	Tremor.	Slight.	Nil.	90	Nil.	40
	Degree of Bradykinesia.	Moderate.	Slight.	40	Slight.	60
	Gait.	Mild Parkinsonian gait does not swing arms.	No change.	-	No change.	-
	Salivation.	Excess, does not dribble.	V. dry [60]	60	Excess less marked.	60
	Vision.	Not blurred.	V. blurred.	90	No change.	-
	Ability to work.	Works in ward.	No change.	-	No change.	-
	Mental State c ref.to depression.	Not depressed.	No change.	-	No change.	-
Case 65 (F.L.T.I) Aet 39.	Rigidity.	Arms - Slight. Legs - Moderate.	Arms - V.slight. Legs - Slight.	60	Arms - V. slight. Legs - Slight.	30
	Tremor.	Nil.	No change.	-	No change.	-
	Degree of Bradykinesia.	Marked.	Slight.	20	Slight.	50
	Gait.	Slow Parkinsonian gait. Drags feet. Does not swing arms.	Walks a little faster & just swings arms a little.	20	Just swings arms a very little.	20
	Salivation.	Excess does not dribble.	V. slight excess. Does not dribble.	90	No change.	-
	Vision.	Not blurred.	Slightly blurred.	90	No change.	-
	Ability to work.	Not working.	Works in laundry.	20	Works in ward.	20
	Mental State c ref.to depression.	Moderately depressed.	Not depressed.	20	Not depressed.	20

N O T E.

For conclusions see page 53.