

ORIGINAL PAPER

Report on mustard gas experiments (Glasgow and London)[☆]

By the Special Sub-committee of the British Homoeopathic Society to the Ministry of Home Security

January 25th, 1943

Origin of the research

The question of the probable action of “potentized” gases in the treatment of casualties caused by contact with “war gases such as Mustard Gas, having been raised, the Council of the British Homoeopathic Society decided to present a Memorandum on the subject to the Ministry of Home Security.

In a covering letter it was regretted” that *no direct* evidence was available to establish scientific proof of the action of “gas potencies but it was suggested that a very simple and practical test could be made in the Government’s experimental laboratories upon Mustard Gas lesions using the homoeopathic potencies then available as treatment. Such experiments would afford the answer which the Ministry seemed anxious to obtain.”

“Without the necessity of these tests, many physicians experienced in homoeopathic practice had requested that these ‘gas potencies’ be prepared and they were quite ready to put them into use should any ‘gas attack’ upon the civilian population be made. They felt that in these ‘gas potencies’ they had something of definite therapeutic value.”

At the request of the Council of the British Homoeopathic Society, the President, Dr. John Paterson, drew up a short Memorandum, which, after approval, was presented to the Ministry of Home Security.

Reply by Ministry of Home Security, August 2nd, 1941

(addressed to Dr. Moncrieff, Secretary of British Homoeopathic Society).

“The memorandum prepared by Dr. Paterson and forwarded with your letter of the 15th June has been carefully studied by our Scientific Advisers. It is felt that initial experiments to prove the value of ‘potentized’ mustard gas in the treatment of burns by this vesicant should be carried out by the British Homoeopathic Society, and if the Society is prepared to undertake research work of this kind the Department will be pleased to provide a solution of mustard gas in benzene for this purpose. This solution, if applied to the bare skin, should produce a blister and certainly a definite and recognizable skin burn, without being really dangerous. Your Society, of course, recognize that the Department could accept no responsibility for any results nor for any mishandling of the vesicant.

“I should be glad to know whether the British Homoeopathic Society will be prepared to undertake experiments of this kind.”

Reply by the British Homoeopathic Society

“The Council decided to proceed at once with experiments and requested the Ministry to deliver a solution of Mustard Gas in benzene to the London Homoeopathic Hospital; also to give any information regarding the size of drop and technique of application to skin, etc.”

[☆] This article is a reprint of a previously published article. For citation purposes, please use the original publication details; *Br Hom J* 1943; 33: 1–12.

Letter from the Ministry of Home Security

"*Size of Drop.*—No standard size drop can be specified as this depends upon the object of any particular experiment. With the solution provided however, a 2 mm. diameter drop placed on the bare skin should produce a blister and certainly definite recognizable skin burn."

"*Strength of Solution.*—The solution supplied consists of 10 per cent, mustard gas in benzene."

Procedure adopted by the British Homoeopathic Society

A special Gas Research Committee was set up with the following members:

Dr. John Paterson (President)	Glasgow.
Dr. Chas. Wheeler	London.
Dr. Le Hunte Cooper	London.
Dr. W. L. Templeton (Convener)	London Area.
Dr. Agnes Moncrieff (Secretary)	London.
Dr. K. G. Priestman	London.

It was decided to divide the 10 per cent, solution of Mustard Gas in benzene into three portions. One portion to be retained for experiment in the London area by members resident in London, one portion to be sent to London Homoeopathic Laboratories to be "potentized" and the resultant preparation was to form the basis of the initial experiments in the treatment of mustard gas burns produced by the given 10 per cent. Mustard Gas solution.

The remaining portion was to be taken by the President for experiment in the Glasgow area.

The subsequent report of this sub-committee is thus divided into two sections, viz. London, Glasgow.

British Homoeopathic Society/Ministry of Home Security report (Glasgow area)

Object

As per letter, Ministry of Home Security, of August 2nd, 1941: "initial experiments to prove the value of 'potentized' mustard gas in the treatment of burns, etc."

Also letter of October, 1941:

- Observe results obtained in Control and in Treated burns by the application of a standardized dose of 2 mm. drop of 10 per cent, solution of mustard gas.
- To determine the natural time of healing by treating the forearm of a subject with a 2 mm. drop and subsequently to treat the same person with a similar size drop under exactly similar conditions and on this occasion to apply the proposed remedial treatment.

Technique

In any such experiment it was realized that certain factors would affect the result and special attention was given to the following points:

Method of application. A glass rod, after heating, was tapered by being stretched and then annealed to a spherical bead of approximately 2 mm. diameter. The rod was dipped into a bottle containing the 10 per cent, solution filled to a standard level for each experiment, and then withdrawn and the surface of the drop allowed to touch the skin. (*N.B.*—The point of the rod must not touch the skin.)

Area affected. Eccentric spread of the solution was confined, so far as possible, to an area of approximately 1½ in. diameter; any further spread being prevented by evaporating the benzene by blowing a current of air on to the forearm.

Temperature of the room. This was adjusted to the same degree for each set of experiments. All experiments were conducted in the same room.

Preparation of the arm. Previous washing with soap and water and shaving of hairy arms was carried out by the volunteer at his own home at least one hour before receiving the application of mustard gas. (*N.B.*—Immediate preparation of the arm before application was not allowed, to avoid any modifying effect from excessive moisture.)

Dressing of the arm. No dressing was applied until blister was evident and then only non-medicated protective dressing was used.

Age, Sex, Physique. In the first series (12 cases) care was taken to match volunteers according to age and physique to avoid as far as practicable variation from this set of factors.

Procedure

Volunteers signed legal form relieving the Society from any claim, and then each was given a recording schedule in which to enter his own description of blister and subsequent stages up to the end of four weeks. This constitutes the *clinical* record.

Photographic record. Lesions were photographed by photoflood light on the seventh day by the Medical Officer (Dr. John Paterson).

First experiment, December 11th, 1941. Warden's Post (Ralston)

Twelve male volunteers arranged themselves in pairs according to age and approximately similar physique.

A number of glass vials similarly labelled and containing white pills were placed on a table and one member of each pair had a first choice of any of these vials. His partner was then required to choose any serial number above or below that of his partner. In this procedure, of each pair of volunteers, one received pills which had been medicated, while the other received pills without medication. The volunteer was unaware of the nature of the pills he had chosen and the Medical Officer was likewise unaware without reference to a code of serial numbers on the vials which had been previously prepared.

Procedure. Having selected a vial, the volunteer immediately noted the serial number and entered this upon his record sheet as the case number. All volunteers then bared the forearm and immediately took the first dose (one pill) and thereafter the Medical Officer applied the 2 mm. drop of Mustard Gas (10 per cent, solution) to the forearm, and allowed the benzene to evaporate before allowing the arm to be covered by the clothing. No dressing was applied.

Medication. In the Glasgow experiments the potency known as 30c was used throughout. (This is 1 to 99 dilution carried out according to the centesimal scale to the 30th time.)

The actual solution of Mustard Gas supplied by the Ministry was "potentized" by the London Homoeopathic Laboratories and was received as a potency in 60 per cent, alcohol. This was used to impregnate absorbent pills, the alcohol allowed to evaporate, and the potency 30c Mustard Gas remained.

Doses. First dose was taken immediately before application of Mustard Gas and the volunteer was asked to take one pill every 2 h for 6 doses, and then 1 pill thrice daily for 7 days.

Recording. Photographic record was made on the seventh day after application.

Clinical record was made by volunteer on typed schedule until the end of 4 weeks or until scab dropped off.

Each record was signed by volunteer before being handed to the Medical Officer.

This procedure was carried out throughout all subsequent experiments in the Glasgow area.

Extract. Records made by volunteers. First experiment (12 cases).

Case No.	Age.	Area of Primary Redness—12 hours.	Drug or Control.
2	34 years	$\frac{1}{2} \times \frac{3}{4}$ (inches)	Drug
3	34 ..	$\frac{1}{2} \times \frac{3}{4}$..	Control
4	44 ..	$\frac{1}{2} \times \frac{3}{4}$..	Drug
5	46 ..	$\frac{1}{2} \times \frac{3}{4}$..	Control
6	57 ..	$\frac{1}{2} \times \frac{3}{4}$..	Drug
7	58 ..	$\frac{1}{2} \times \frac{3}{4}$..	Control
8	37 ..	$\frac{1}{2} \times \frac{3}{4}$..	Drug
9	35 ..	$\frac{1}{2} \times \frac{3}{4}$..	Control
10	42 ..	$\frac{1}{2} \times \frac{3}{4}$..	Drug
11	46 ..	$\frac{1}{2} \times \frac{3}{4}$..	Control
15	52 ..	$\frac{3}{4} \times \frac{3}{4}$..	Control
16	52 ..	$\frac{3}{4} \times \frac{3}{4}$..	Drug

Extract. Records made by Medical Officer.

Lesion Description.	Drug (Medicated pill).	Control (Un-medicated pill).	Total.
Superficial	6	0	6
Medium or Deep ..	0	6	6
	6	6	12

Remarks

Upon clinical and photographic records of the first series of 12 (matched) cases.

Area of primary redness at 12 h: Tabulation of measurements recorded by the volunteers suggests that some degree of standardization had been achieved by the technique as described under "Technique".

Type of lesion (descriptive terms): Observations made on the seventh day after application of mustard gas suggested that well defined categories could be used to describe the type of lesion. To avoid any personal bias on the part of the single medical observer in the Glasgow experiments, it was decided to rely upon two well defined categories only:

"S" (superficial) means that the skin over the affected area, although damaged in a varying degree, was *still intact* over the whole area on the seventh day. There was *no apparent breach of surface*.

"D" (Deep). Under this category it was found expedient to include lesions which might have been described as "medium" and also those which might have been described as "deep".

Outstanding features in these records: Photographic. Record No. 6 showed marked degree of primary redness as compared to the others in the "S" (superficial) group under treatment by drug "D", when photographed on seventh day.

Clinical. Record No. 6 reveals that of the 12 volunteers in this experiment, this volunteer was the only one to depart from the suggested timing of the doses.

All the volunteers (with the exception of No. 6) took second dose (one pill) 2 h after the application of mustard gas. No. 6 did not take second dose until 9½ h after.

A further series of volunteers were "blistered" as above, but with no attempt to choose cases according to age, etc.

Summary of 28 cases.

Lesion.	Drug.	Control.	Total.
Skin intact : "S"	12	2	14
Skin Destroyed : "M" or "D" ..	2	12	14
	14	14	28

Extract. Photographic Records and Clinical Notes.
(Second application of Mustard Gas. (12 cases.)

FIRST APPLICATION.			SECOND APPLICATION.		
No Treatment given.			30c potency Mustard Gas given.		
Date.	Case No.	Type of Lesion.	Date.	Case No.	Type of Lesion.
27- 1-42	22b	D	26-2-42	37	S
11-12-41	15	D	26-2-42	35	S
11-12-41	5	S	19-3-42	45	S
11-12-41	3	D	19-3-42	47	S
15- 1-42	19	D	19-3-42	49	S
11-12-41	9	D	26-3-42	53	S
15- 1-42	23	S	26-3-42	55	S
30c potency Mustard Gas given as treatment.			No treatment given.		
11-12-41	16	S	26-2-42	36	S
11-12-41	8	S	26-2-42	38	S
11-12-41	4	S	19-3-42	46	S
30c potency Mustard gas given as treatment.			30c potency Mustard Gas given as treatment.		
15- 1-42	18	D	26-2-42	39	S
15- 1-42	25	D	19-3-42	51	S

Extract. Photographic and Clinical Record. (1 case only).

FIRST APPLICATION.			SECOND APPLICATION.		
No treatment given.			No treatment given.		
9-12-41	13	D	27-2-42	40	S
					Marked and extensive dermatitis.

S means *superficial* with no breach of skin showing on seventh day.

S signifies superficial lesion with little evidence of blistering. These lesions approximate to *first degree* burns.

D signifies *destruction* of skin varying from partial breach to complete destruction and crater formation.

Remarks

In the first series of experiments observations were made on the reactions following the application of Mustard Gas upon different individuals acting as "subject" (Treated) and "control" (Untreated),

As suggested in the Ministry's letter of October, a second series of experiments were also carried out upon the same individual who was given a second application of mustard gas after the first lesion had healed.

Three groupings are possible and tabulated. A fourth group is also possible, but only one case is recorded, where two applications were made of Mustard Gas without treatment on either occasion. Owing to the recognized danger of sensitization from a previous exposure and the risk of extensive dermatitis following a second application of Mustard Gas, it was considered inadvisable to expose volunteers to two applications without treatment on at least one occasion.

The single case recorded is that of the Medical Officer (J.P.), in charge of Glasgow experiments.

Personal note

Marked and extensive Dermatitis appeared upon the seventh day after exposure to second application of Mustard Gas, and this necessitated treatment.

The remedy chosen on the clinical symptoms present—according to Homoeopathic principles (the Law of Similars) was *Rhus toxicodendron*. This was used in the 30c potency and gave speedy relief to the intense itch and was followed by the disappearance of the extensive dermatitis within 48 h.

Three groups tabulated.

	<i>First application.</i>	<i>Second application.</i>
(1)	No Treatment.	TREATMENT given.
(2)	TREATMENT given.	No Treatment.
(3)	TREATMENT given.	TREATMENT given.
1 Case (only):	No Treatment.	No Treatment.

The foregoing concludes the report of the experiments carried out in the Glasgow area with the application of a 2 mm. drop of a 10 per cent, solution of Mustard Gas in benzene to the forearm of volunteers. Photographic and clinical records are available but are not published in this report. (*Total number of applications—53 cases.*)

In concluding this report I wish to express my thanks to the Chief Warden, Assistant Warden, Wardens and personnel of the Ralston (Paisley) District 16, Post 8, for the willing co-operation and enthusiasm in carrying out these experiments, and for the willingness of each volunteer to expose himself to whatever might develop from the application of Mustard Gas. Also to express my appreciation to the efficiency and artistry with which the clinical records were kept by the individual volunteers.

(Signed) John Paterson,
Medical Officer in Charge
(Glasgow area).

British Homoeopathic Society/Ministry of Home Security report (London area)

The purpose of the experiments was to discover if the administration of "potentized" Mustard Gas, given by the mouth, would modify the resulting lesion produced by the application of Mustard Gas to the skin.

The experiments were conducted with the approval of the Ministry of Home Security, who provided a 10 per cent, solution of Mustard Gas in benzene, and suggested that a 2 mm. diameter drop should be applied to the forearm of volunteers.

As far as possible *subjects*, i.e. those taking the potency, and *controls*, i.e. those receiving no medication, were "blistered" at the same time and under exactly similar conditions.

The total number of volunteers in this series of experiments was 240, of which 127 were "subjects" and 113 "controls".

After a series of preliminary experiments, it was agreed that the appearance of the lesion on the seventh day after the application of Mustard Gas solution was the best guide in assessing the result of medication.

Observations were therefore made by two medical officers on the seventh day *after* the application of Mustard Gas and only those cases in which there was agreement as to the appearance were included in the records. These appearances referred to the condition of the lesion and were graded into "superficial", "medium" and "deep".

It was by no means difficult to decide upon visual appearance, but where there was any doubt the description was in favour of the more severe lesion, i.e. if there was doubt as to whether the appearance suggested "superficial" or "medium", the decision was given in favour of "medium" and similarly as between "medium" and "deep".

Of one thing there was no doubt, that what might be described as "messy" lesions were almost invariably amongst the "controls".

Neither of the observers were aware at the time of inspection, which cases were medicated and which were not, and the administration of placebo to controls ensured that none of the volunteers were aware which were receiving drug and which not.

The preparation of the potencies was in the hands of qualified dispensers who had nothing to do with the experiments themselves and in whose hands remained the code numbers which were only checked up after the conclusion of the observations. No medicated dressing was used, nor any local application permitted in the cases tabulated in these records.

Treatment and timing of doses

(1) In the first series of cases, doses of drug potencies and placebo were administered on the spot within 5 min of the application of the 10 per cent. Mustard Gas solution to the forearm; a second dose 4 h later, and one dose three times daily for one week.

At the end of seven days each case was seen by medical observers and the appearance noted.

In this series the following drugs (made according to the Homoeopathic method and selected because of the similarity of their "provings" to the clinical appearances of the lesions) were used:

Mustard gas 30c; Rhus toxicodendron 30c; Kali bichromicum 30c; Opium 30c; Cantharides 30c; Variolinum 30c.

(2) In the second series of cases, potencies of Mustard Gas 30c and *Rhus toxicodendron 30c* were used in advance (prophylaxis) of the application of 10 per cent. Mustard Gas solution.

In these cases, three doses were given at 4 hourly intervals during one day, 14 days before the application.

Age groups

As far as possible "subject" and "control" cases were of the same age group, the percentage in such groups being as follows:

Under 20 years	2 per cent.
20 to 30 years	12 per cent.
30 to 40 years	40 per cent.
40 to 50 years	35 per cent.
50 to 60 years	9 per cent.
60 to 70 years	2 per cent.

Statistical analysis of 240 cases (127 subjects, 113 controls). Type of lesion—S means Superficial; M—Medium; D—Deep. Tables No. I (139 cases). See letter of June 18th.

	<i>Mustard Gas 30 (M/T).</i>			<i>Mustard Gas 30 (M/N).</i>			<i>Rhus tox. 30.</i>		
	Drug.	Control.	Total.	Drug.	Control.	Total.	Drug.	Control.	Total.
S ..	4	2	6	6	3	9	5	5	10
M ..	4	2	6	6	5	11	5	2	7
D ..	3	8	11	1	0	1	0	4	4
	11	12	23	13	8	21	10	11	21
	113			9			2		
	113			26			175		
	246			44			440		
	472 X ² = 3.58			99 X ² = 0.95			557 X ² = 5.24		
	<i>Kali bich. 30.</i>			<i>Opium 30.</i>			<i>Canthar. 30.</i>		
	Drug.	Control.	Total.	Drug.	Control.	Total.	Drug.	Control.	Total.
S ..	9	4	13	2	5	7	3	2	5
M ..	4	4	8	8	3	11	6	5	11
D ..	1	3	4	3	5	8	3	4	7
	14	11	25	13	13	26	12	11	23
	142			217			16		
	16			384			3		
	240			84			32		
	300 X ² = 2.60			685 X ² = 4.05			51 X ² = 0.39		

Analysis of above 139 cases. Drug effect against Control.

Type of Lesion.	Drug.	Control.	Total.	
Superficial	29	31	50	2903 7704 30076
Medium	33	21	54	
Deep	11	24	35	
Total	73	66	139	40683 X ² = 8.44

Statistical analysis

It was suggested that the tabulated results in this series of experiments should be submitted to statistical authorities for analysis.

It should be pointed out that the statistical reports are made on the clinical data as given by the medical observers to the statistical experts.

Two sets of tables were presented to the Scientific Computing Service Ltd. and extracts from letters and figures inserted by the calculators are appended herewith.

Statistical report

Tables No. 1 (139 cases). *Extract from Letter of June 18th, 1942.*

"The results are briefly these : all potencies taken together provide a sample of sufficient size to detect any beneficial effects and the verdict of the

Table No. II (101 cases). See letter of October 13th.

		<i>Variolinum 30c.</i>			<i>Rhus tox. 30c.</i>		
		Drug.	Control.	Total.	Drug.	Control.	Total.
S	..	4	2	6	3	3	6
M	..	4	6	10	7	1	8
D	..	3	1	4	1	5	6
		11	9	20	11	9	20
		33			6		
		90			338		
		64			353		
		187	$X^2 = 1.89$		697	$X^2 = 7.04$	
		<i>Rhus tox. 30 (Prophylactic).</i>			<i>Mustard Gas 30 (Prophylactic).</i>		
		Drug.	Control.	Total.	Drug.	Control.	Total.
S	..	4	2	6	13	1	14
M	..	2	6	8	5	7	12
D	..	3	5	8	5	8	13
		9	13	22	23	16	39
		193			2445		
		98			547		
		4.5			832		
		295.5	$X^2 = 2.53$		3824	$X^2 = 10.39$	

Total number of *Rhus tox.* cases from, Tables I and II (used as treatment, not as prophylactic).

		Drug.	Control.	Total.	
S	8	8	16	
M	12	3	15	4
D	1	9	10	2089
Total		21	20	41	2856
					4949 $X^2 = 11.78$

statistical test, known as X^2 test of significance, is that there is certainly an indication of a beneficial effect of the drugs in general. From the figures in red on the enclosed sheet, you will see that on the group receiving drugs, there is a definite shift of frequency towards the group "Medium" and "Superficial", whilst in the controlled group, frequencies are pretty even. This shift in frequency is tested by the X^2 test given at the bottom (8.44). This value has to be compared with what is called a significant level applicable to tables of your type. This level is known to be 5.99. Any value *exceeding* this critical value is an indication that the shift of frequency is significant."

"As you see the values of X^2 tested singly are smaller than this value and are therefore deemed insignificant. The reason for this is that the samples are too small to reach any definite conclusions in these cases.

Tables No. II (101 cases). Extract from letter of October 13th, 1942.

"There is also an indication that the potency M(T) Mustard Gas is active."

"The value for *Rhus tox.* (5.24) is the nearest to the level of significance and this potency is therefore the most hopeful one to be followed up.

"Of the four new groups, two are certainly significant, namely *Rhus tox.* and *Mustard* (Pro.). It should, however, be noted that the effect of *Rhus tox.* is to decrease the frequency of the 'deep' group and to increase the frequency of the 'medium' group, whilst leaving the group 'superficial' unaltered. Its effect seems, therefore, limited to reducing deep cuts (lesions) to medium cuts (lesions)."

"However, this effect is now *definitely established*, as you see from the high value of X^2 (11.78) obtained by combining the two groups treated by *Rhus tox.* drug and their controls."

"*Mustard gas* (Pro.), on the other hand, shows a definite reduction in both the deep and medium cuts (lesions)."

(Signed) H. O. Hartley.

Remarks

These experiments carried out in the London Homoeopathic Hospital were supervised by Dr. W. Lees Templeton and Dr. A. Moncrieff, with valuable help in the administration of potencies by Dr. K. Priestman.

Very great assistance was given by the London Homoeopathic Hospital and special thanks are due to Miss Jenkins, Dispenser, Mr. Knowles, Secretary, and his staff, to the Matron and the Nursing Staff, to the students of the Missionary School of Medicine, who were the first volunteers to receive applications of Mustard Gas, to the members of the general public who later volunteered and received application of Mustard Gas, and to the still greater number who offered themselves but were not called upon.

The sub-committee also wish to express their gratitude to Dr. Hartley, of the Scientific Computing Service Ltd., for his valuable collaboration and to Messrs. A. Nelson and Co. Ltd., for supplying the prophylactic potencies.

(Signed) W. Lees Templeton

(Convener, London Area).

Sub-committees remarks

The Sub-committee appointed by the British Homoeopathic Society to carry out these experiments have considered the joint reports and make the following comments thereon:

A total number of 293 applications of Mustard Gas (10 per cent, in benzene) was made on the forearm of volunteers and is of sufficient size upon which to detect any beneficial effects from treatment against untreated controls.

The Glasgow cases are too small in number to be of value in themselves from a statistical standpoint and the assessment of their results is dependent upon the acceptance of the standard of accuracy in the technique employed in these experiments.

The foreword to the report shows that the experiments were carried out with a full knowledge of the factors which could cause variation in the results and the recorded areas of primary redness may be taken as evidence that some degree of standardization was obtained in the technique of application of the dose of Mustard Gas.

It should be pointed out that even with the most rigid technique of application to satisfy scientific standards, in the first series of experiments in Glasgow and London, there would still remain one uncontrollable factor, that of the individual reaction, since in this series different individuals acted as "subject" and "control".

This constitutional factor is not likely to be missed by any physician acquainted with Homoeopathic philosophy and practice.

The London cases do provide a sample of sufficient size to detect any beneficial effects and the opinion expressed in the statistical report is of considerable importance.

From the first tables analysed, using the X^2 test, three points of significance are brought out:

- (1) Beneficial results from *drugs in general*.
- (2) *Rhus tox.* reaches a value (5.24) nearest to the level of significance.
- (3) *Mustard gas* potency is active.

In the second series of cases and analysis of four new groups the following points are brought out:

- (1) *Rhus tox.* reaches a high value (11.78) and its effect is *definitely established*.
- (2) *Mustard gas* (Pro) reaches a high level (10.39) of significance.

The analysis also indicates that the effect of *Rhus tox.* on the lesion caused by the application of Mustard Gas, is to shift the frequency from "deep" to "medium", leaving the "superficial" frequency unaltered

The analysis also indicates that the effect of Mustard Gas potency (Prophylactic) is characterized by a shift of frequency both in the "deep" and "medium lesions", i.e. it tends to *increase the frequency of superficial lesions*.

This action of Mustard Gas potency is also seen in the series of Glasgow cases, where a second application of mustard gas solution was made to the same individual.

In the first group (7 cases), after a first application without treatment and an interval varying from 4 weeks or more, each case was given a second application of the Mustard Gas solution to the other forearm, but this time treatment with Mustard Gas potency was given. In all the cases the degree of the second lesion was less severe than the first and all were recorded as "superficial".

In the second group (3 cases only) Mustard Gas potency was given at the first application but no treatment at the second application. In all the cases, despite the fact that no treatment had been given on this second occasion of application, the lesions resulting were remarkable because of the *superficial* character.

In the third group (2 cases only) Mustard Gas potency was given both on the first and second application and the type of lesion noted after the second application was such that it was found very difficult to make photographic record because of the slight and superficial nature of the lesion on the seventh day.

These Glasgow cases, although small in number, are in accord with the findings of the statistical analysis of the greater number of the London area—that Mustard Gas potency increases the number of Superficial lesions resulting from the application of mustard gas (10 per cent. solution) to the skin.

It should also be noted that in the Glasgow cases, Mustard Gas potency 30c was used in all treated cases and that the first dose was administered before the application of the mustard gas solution and the second dose taken in 2 h time.

In the London cases the first dose was given immediately after the application and the second dose in 4 h time.

This could account for the more superficial type of lesion noted in the Glasgow cases.

Sensitization. None of the volunteers who received two applications with treatment either on the first or second occasion, showed any degree of Dermatitis, while in marked contrast the single case which received no treatment on either of the two applications developed an extensive Dermatitis which called for treatment.

It is to be noted that the remedy, *Rhus toxicodendron*, was selected from the clinical appearance of the lesion caused by the application of Mustard Gas to the skin and according to homoeopathic principles by a physician of experience in homoeopathic treatment. This selection was made many weeks before the statistical analysis of the London cases indicated the possible effect of *Rhus tox.*

Conclusions

From a full consideration of the available data from these experiments the Sub-committee of the British Homoeopathic Society are of opinion that the administration of a *potency of Mustard Gas* given before exposure to the action of Mustard Gas applied to the skin might be expected to protect the subject to a certain degree.

Similarly, the administration of a *potency of Rhus toxicodendron* given after the exposure to the action of Mustard Gas, might be expected to modify the lesion and hasten the rate of healing.

Statistical analysis confirms in a remarkable manner what might have been expected from an acquaintance with the homoeopathic law, viz. that *Rhus tox.* being *similar* (Homoeopathic) would be more efficacious in the treatment of the actual lesion caused by Mustard Gas; also that Mustard Gas potency being alike (Isopathic) would be more efficacious in the preventive treatment.

(The term "preventive" treatment is used here in a comparative sense, as all volunteers did show lesions to a greater or lesser degree.)

In presenting this report, the Sub-committee recall that the British Homoeopathic Society originally submitted a Memorandum to the Ministry of Home Security, suggesting that simple and practical experiments would afford scientific data that "potentized" gases had therapeutic value in the treatment of "gas casualties".

These experiments have been carried out in accordance with the letter of August 2nd, 1941, in which the Ministry of Home Security suggested that "initial experiments to prove the value of 'potentized' Mustard Gas in the treatment of burns by this vesicant, should be carried out by the British Homoeopathic Society".

The Sub-committee of the British Homoeopathic Society are of the opinion that the data so far available from these initial experiments confirm the thesis formulated in the Memorandum presented to the Ministry of Home Security.

Warning

Notwithstanding any statement contained in this report, the Sub-committee of the British Homoeopathic Society wish to concur with the warning issued by the Ministry of Home Security, emphasizing the necessity for prompt and efficient treatment by the use of Anti-gas ointment as detailed in the official handbooks by which means it is possible to neutralize Mustard Gas and prevent the development of a lesion as the result of contact with the skin.

On behalf of the British Homoeopathic Society,

(Signed) John Paterson,

President.

January 25th, 1943.