because of its stimulant properties. The drinking of large quantities of water, barley water, or lemon water, should be encouraged, as elimination is thereby promoted and the degree of toxæmia reduced.

2. *Absolute rest* during the acute stage is of paramount importance. In the severer cases collapse, shown by laboured breathing, cyanosis, exhaustion, sweating, and rapid acceleration of the pulse, is produced by any degree of movement. The patient should be disturbed as little as possible by examination, which should always be as brief as is consistent with efficiency; however desirable it may be from an academic point of view to determine the precise nature and extent of the pulmonary complications, their exact diagnosis matters little so far as treatment is concerned, for this is indicated by the general condition of the patient, rather than by the pathological lesion present.

3. *Sleep must be ensured.* The result of a sleepless night at once shows itself by a falling off in the patient's general condition, and two or three such nights may make all the difference between recovery and death. Especially is sleep necessary in patients showing pronounced tremor; when this symptom is present the physician's first endeavour must be the production of sleep. He should regard tremor as an indication of exhaustion and a danger signal which he must not disregard. It has been our custom never to allow a sleepless night. Tepid sponging may first be tried, but, if insufficient, the patient should be given heroin gr. $\frac{1}{2}$ hypodermically, repeated once or twice, if necessary, at intervals of an hour and a half, until sleep is obtained. A satisfactory night's rest is almost always followed by considerable improvement in the general condition.

4. *Medicinal Treatment.*—We had had ample opportunity in the first stage of the influenza epidemic of testing the action of various medicinal agents, and were not satisfied that any of them exercised much influence on the course of the disease. At the commencement of the second wave we determined to test systematically certain likely remedies with the view of determining, if possible, their relative value, and of enabling us to adopt as routine treatment that which appeared to give the best results. Accordingly, groups of patients—fifteen in each—were put upon different drugs, and the progress of the various groups noted and compared. Aconite, aspirin, sodium salicylate, belladonna, arsenic, quinine, Dover's powder, and gelsemium were tested in this way. The results were most striking. The patients treated by gelsemium improved in a manner far exceeding those given any other treatment. They stated that after a few doses their headache and backache had been much relieved, and that they felt greatly better in every way. In most the temperature speedily commenced to fall, and the improvement in the general condition was obvious. So great was the contrast that it is no exaggeration to say that it was usually possible, without previous knowledge, to pick out the cases treated with this remedy. Of the other drugs tested, belladonna showed evidence of beneficial action in a number of cases, but none of the other drugs appeared to have the slightest influence. The patients were not selected in any way, but were taken consecutively as they were admitted; moreover, we were working separately at the time, and came to the same conclusions independently. The same observation was also made by the sisters in charge of the wards, who enthusiastically supported gelsemium against the other remedies.

We are well aware of the fallacies attending judgement of the action of remedies, and have therefore endeavoured to examine very critically our original observation. For this reason we have delayed drawing attention to the beneficial action which we believe gelsemium to exert. The test was repeated with the same result—again so striking that thereafter we did not feel justified in using any other remedy. Seeing, however, that belladonna appeared also to be of value, we considered it advisable to use it in combination. All our recent cases, therefore, have been treated with the following:

R.	Tr. gelsemii	...	...	...	...	℥ssij
	Tr. belladon.	...	...	...	...	℥v
	Potas. cit.	...	...	...	...	gr. x
	Syr. aurantii	...	...	...	...	℥j
	Aq. chloroformi	...	...	...	ad	℥j

Sig. One ounce four hourly for the first 24 hours; thereafter $\frac{1}{2}$ oz. every four hours until temperature is normal.

Potassium citrate was added as a mild diuretic. When the temperature reaches the normal the remedy should be stopped.

Gelsemium has previously been recommended as a remedy for influenza.¹ Our observations lead us to believe that it exerts a marked beneficial action on the course of the disease, that it tends to shorten the illness, and it undoubtedly relieves—and rapidly—the discomfort of the patient. Beyond slight ocular disturbances in a very small number of cases, we have not seen any disadvantages in its use.

5. *Stimulants* are indicated in the severe toxic cases; where the pulmonary symptoms are severe; where tremor is marked; where the pulse is unstable; and when the patient is obviously collapsed. Alcohol in the form of brandy, whisky, or champagne gives the best results, and the large quantities that can be consumed without producing any signs of inebriation is very remarkable. The usual dose required is half an ounce every four hours, or more often if the case be urgent. Should there be any suggestion of overdosage, aromatic spirits of ammonium ($\frac{1}{2}$ to 1 drachm) may be substituted. Tincture of digitalis (m v every four hours) seemed to be useful when there were any signs of cardiac failure. Caffeine, strychnine, adrenalin, and pituitrin produce no beneficial action of any kind.

6. *The treatment of pulmonary complications* calls for no special discussion, as it is carried out on the usual lines. It may be mentioned, however, that the compound tincture of chloroform and morphia (m x every four hours) is particularly efficient in soothing the often troublesome cough, and that inhalations of menthol and benzoin greatly relieve the tightness in the chest so frequently present.

Treatment during Convalescence.—The degree of debility produced by influenza of the recent type is often extreme, and is particularly associated with circulatory symptoms—palpitation, coldness, and blueness of the extremities, and a tendency to syncope—as well as marked general weakness. During convalescence a period of comparative rest is indicated, and a nourishing diet with extras—milk, eggs, port wine, and stout or porter. Iron and arsenic, cod-liver oil, or some bitter tonic should be prescribed according to the requirements of each individual case.

REFERENCE.

¹ Ellingwood, *Prescriber*, 1913, p. 275.

A NOTE ON THE EPIDEMIOLOGY OF INFLUENZA AMONG WORKERS

IN GAS WORKS, IN A CORDITE FACTORY, AND IN A
TIN MINE.

By CAPTAIN A. GREGOR, R.A.M.C.(T.),
SPECIALIST SANITARY OFFICER, FALMOUTH.

[The following interim report to the Medical Research Committee is published now in the hope that observations of a similar kind may be collected elsewhere. Bacteriological and chemical analyses of the events here recorded are now in progress, with a view to finding how far the observed facts may be related to the action of some inhaled substance, either upon infective agents or upon the protective mechanisms of the respiratory tract as such.]

For many years it has been an accepted fact among men working in gaseous fumes that they are practically immune from nasal catarrh and respiratory diseases in general. Further, in some parts of the country it is the custom to take children suffering from whooping-cough to the nearest gasworks and expose them to the fumes emanating from the oxide of iron purifiers during the process of cleansing, and the parents of these children firmly believe that by doing so the attack is much mitigated.

With this widespread belief in mind, investigation has been made during the influenza epidemic among various classes of the population, to see if there were any substantial grounds for this popular belief, and the case incidence has been ascertained among the classes of persons shown in the tables.

Table showing Incidence of Influenza among (a) Navy (a Patrol Base of average strength of 1,350); (b) Army (a Battalion of average strength of 1,050); (c) Gas Workers (Nine Gasworks, employing 148 men).

Epidemic.	(a) Navy.	(b) Army.	(c) Gas Workers.
July ...	321 = 23 %	100 = 9.5 %	5 = 3.3 %
Autumn...	125 = 9.2 %	110 = 10.4 %	5 = 3.3 %
Total ...	446 = 40 %	210 = 20 %	10 = 6.7 %

(d) At a National Cordite Factory.

The total number of employees, men and women, may be divided into the following classes:

Class A. Not working in fumes	...	732
Class B. Working in HNO ₃ fumes, full time	...	70
Class C. Working in HNO ₃ fumes, part time	...	230
Classes B and C	...	300
Class D. Working in acetone recovery stoves	...	18
Classes B, C, and D	...	318

Number of Cases according to Class and the Percentage.

Epidemic.	Class A.	Class B.	Class C.	Classes B and C.	Class D.	Classes B, C, and D.
July ...	121=16.5%	7= 4.9%	2=0.86%	9= 3%	0	9=2.7%
Oct. 16-29 ..	100=13.6%	4= 2.8%	2=0.86%	6=2%	0	6=1.8%
Total ...	221=30.1%	11=15.7%	4=1.7%	15=5%		15=4.7%

(e) Tin Workers.

The total number employed in the mine was 50. This number may be divided into Class A, workers underground, numbering 23, and Class B, workers in dressing plant who are working more or less in fumes of SO₂, numbering 27.

The ore is crushed in the stamps and passed over the water concentrators. The concentrate is roasted in ovens to get rid of the sulphur, and thus a large amount of SO₂ fumes is discharged into the building.

Number of Cases in the Autumn Epidemic according to Class, and the Percentage.

Class A	...	14 = 60.8 per cent.
Class B	...	3 = 11.1 "

The burning-house of this mine lies in a valley, and there are seven cottages, all situated within two hundred yards of the stack from which the SO₂ fumes are discharged. Under certain atmospheric conditions the fumes lie heavily on these houses. They have twenty-seven inhabitants, and only one case of "influenza" occurred among them, and he was one of the underground workers in the mine. A small village lies about a quarter of a mile distant, and quite outside the radius of the fumes. Here the cases were numerous.

(f) Other Classes of the Civil Population.

As influenza is not a notifiable disease it is impossible to get exact statistics of the number of victims. But taking into account the evidence we have, such as the death-rate, the number laid aside from work in the public civil services, the largely diminished attendances at the schools throughout the country, resulting in many places in closure, we are justified in saying that the case incidence must have been high. Then again, though the figures are much too small to warrant any definite conclusion, the numbers affected among the non-fume workers in the cordite factory may be taken as some indication of what happened among the general community. On the other hand, apart from the smallness of the numbers, it would be manifestly unfair to draw any conclusions from the cases occurring among the underground tin workers, as the conditions under which they labour lead to the easy diffusion of any infection. The conditions under which the men of a naval patrol base live are such as tend to the spread of infection also, and this accounts for the high incidence rate among them.

Percentage Summary of Case Incidence.

Navy ...	...	40.0
Army ...	...	20.0
Cordite workers not in fumes	...	30.1
Cordite workers in fumes	...	4.7
Gas workers	...	6.7
Tin mine workers not in fumes (one epidemic)	...	60.8
Tin mine workers in fumes (one epidemic)	...	11.1

Notwithstanding the diversity of occupation, a comparative study of the above figures gives a remarkable picture of the immunity of workers in certain chemical fumes to a certain disease. This is clearly brought out when the figures for the cordite factory are studied. Here a certain number of men and women not only work but also live in their own homes under exactly similar conditions in every respect, except for the one fact that some are more or less exposed to fumes during their working hours, others are not. In one gasworks which came under review there were twenty-five employees, twenty-four of whom worked more or less in fumes. There was only one case, and he never worked in fumes. He was a cinema hall attendant in the evening.

Therefore, from the epidemiological evidence, though it does not cover a large number of people, it would seem that the popular belief in the cure of "colds in the head" by fumes has some foundation of truth.

TREATMENT OF WOUNDS BY PARAFFIN.

BY

CAPTAIN E. F. PRATT, R.A.M.C.(V.).

THE question of the treatment of wounds has been one of absorbing interest ever since Lister revolutionized surgery. One by one various treatments have held sway, and hosts of antiseptics have been acclaimed by their various supporters in turn as the most rational and effective agent to use as a dressing.

In the BRITISH MEDICAL JOURNAL for January 13th, 1917, was an interesting article by Lieut.-Colonel A. T. Hull on the treatment of burns by paraffin, and again in the issue of August 24th, 1918, there was another interesting article by Major William Haig on the treatment of wounds by soft paraffin. The latter points out the value of ordinary soft paraffin in the treatment of lacerated wounds.

The cases I mention in this short paper are especially interesting, inasmuch as not only is the effect of the first dressing shown, but I have been able to give the history of the majority of the cases from start to finish.

As certifying factory surgeon for East Newcastle-on-Tyne, and as surgeon to Newcastle Corporation Tramways, and more particularly as medical referee under the Workmen's Compensation Act to Messrs. Hawthorn, Leslie, and Co., St. Peter's Works, it is my fortune to come into contact with great numbers of burns and accidents every year.

Only the minor accidents come under my notice, as the major ones are taken straight from the works to the infirmary to be there treated. I have been struck over and over again by the long-drawn-out process of healing of burns and lacerated wounds when subjected to the hitherto orthodox treatment, and when I read of the excellent results obtained by the treatment of burns by soft paraffin (or ambrine) I could not help thinking that it would be worth while to try the experiment of treating wounds in a similar way.

During the early summer of last year I treated several cases of lacerated wounds, and was so struck by the results that I asked for and was readily given permission to treat systematically lacerated wounds and burns occurring at the works of Messrs. Hawthorn, Leslie, and Co.

The results, to my mind, are convincing, and I know of no other treatment in which the constitutional symptoms so quickly disappear, in which the pain so rapidly subsides, and in which healing is so uninterrupted as in wounds and burns treated by soft paraffin. In some cases I used ambrine and in others No. 7 paraffin, and I cannot say that I have any preference for one medium over the other, as in both the results could not have been more gratifying.

Method of Procedure.

The wound or burn is first thoroughly cleansed with sterilized water; the paraffin is then melted and either sprayed by a special spray or painted by a sterilized brush over the affected area. One layer of gauze is then placed over the injured part, and then another layer of melted paraffin is either sprayed or painted over the gauze. On the top of this a cotton-wool pad is placed, and then