fifteen to forty-five minutes after the preliminary dose. Clinically, the typical patient falls very shortly into a light sleep from which he may be easily aroused. The condition lasts from three to four hours. From this partial narcosis the patient awakens feeling markedly refreshed, free from nausea, and in a surprisingly number of cases actually demands food. It is noteworthy that the administration of the drug is not followed by the mental depression so frequently seen after bromid or veronal medication.

In cases where nausea is very severe and emesis almost continuous, it is obvious that the drug cannot be given in capsule form, for it is ejected before its pharmacological action can have taken place. On the other hand, iced bitters and certain stomachics are fairly well tolerated and retained by patients with fairly severe nausea, and the administration of the drug in ice water permitted retention for sufficient time for it to take effect. The administration in this way in ice water was found to be vastly superior to its administration in milk or syrups, and it might be remarked in passing that we are coming to use this method in an increasing number of cases, almost to the exclusion of the capsule. Emphasis must be placed on the importance of using water well iced; any suggestion of a warm solution is not well tolerated.

A small percentage of the victims of mal de mer present as the sole symptom a more or less severe degree of vertigo. These patients are usually quite comfortable while recumbent, but become very dizzy upon attempting to walk about. In these cases one capsule (3 grains or 0.2 gram) administered in solution in ice water suffices to clear up this condition in a very satisfactory manner.

The intravenous use of sodium amytal, which is finding a broad field of usefulness in surgery and obstetrics, has not as yet been attempted in this study. It does, however, open up a possible avenue of treatment in those rare cases of seasickness in which the patient is actually dangerously ill.

The rectal administration of sodium amytal has proved of value in other conditions, and it is easily seen that in selected cases this method should find a place in the treatment of mal de mer. It may be given either by inserting the capsule as a suppository or by dissolving its contents in a little water and injecting the solution into the rectum.

CONTRAINDICATIONS

Contraindications are singularly few. It should be given very cautiously to elderly people with generalized arteriosclerosis and hypertension. Should vascular depression manifest itself in an exceptionally sensitive patient, three-eighths to three-fourths grain (0.025 to 0.05 gram) ephedrin sulphate and seven and one-half grains (0.5 gram) caffein sodiobenzoate may be administered hypodermically. Sodium amytal should not be given to patients known to be hypersensitive to barbituric acid derivatives. In our series we have yet to encounter a case in which the slightest unfavorable reaction was noted.

SUMMARY

1. An extensive study was made of the value of sodium amytal in seasickness.

2. Comparisons were made between sodium amytal and several widely employed remedies for seasickness.

3. In order of efficacy, both as prophylactic and curative properties, we have (*a*) sodium amytal; (*b*) hyoscin hydrobromid; and (*c*) veronal.

4. One capsule (3 grains or 0.2 gram) repeated, if necessary, in two hours, was found to be remarkably effective.

5. Administration in solution in one ounce of ice water was found to be the method of choice.

6. The chief contraindications are the chronic degenerative processes, particularly in the elderly. It should not be given to those known to be hypersensitive to barbituric acid derivatives.

7. Ephedrin sulphate and caffein sodiobenzoate may be given hypodermically should vascular depression manifest itself in an exceptionally sensitive patient.

8. The intravenous and rectal methods of administration are suggested for selected cases.

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WHAT TO EAT ON GOING TO BED*

By Leo L. Stanley, M. D.
and
Gordon L. Tescher
San Quentin

THE hostess is often concerned with what she should serve to her guests after an evening of bridge. It has been demonstrated that the taking of a cup of coffee on retiring insures a more restful night than the taking of hot water or going to bed "on an empty stomach."†

This report is on some experiments which were made to find out whether the average individual rests better after eating a steak on retiring or devouring a quarter of a pound of cake, or taking ice cream, butter, or other fatty foods.

APPARATUS

An apparatus similar to that for determining the effects of coffee on sleep was used. (See California and Western Medicine, May 1931, page 359, for illustrations of apparatus used.)

This consisted of beds suspended over pneumatic bulbs in such a way that any movement of the subject was transmitted by rigid air-filled tubes to the recording kymograph. The apparatus is graphically described in Figure 1 of above referred to illustrations.

Figure 2 shows the arrangement of the bed suspended over the pneumatic bulb which in turn is connected by means of the air-filled tube to the kymograph (Figure 3), as per illustrations noted above.

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*From the Medical Department of the California State Prison at San Quentin, California.

†"The Effects of Coffee on Sleep" by Stanley and Tescher, California and Western Medicine, Vol. 34, No. 5 p. 359, May 1931.

MEN SELECTED FOR THE TESTS

Seven men prisoners were selected for the tests, as follows:

	Age	Weight	Occupation	Crime	Time Served
Subject 1	20	130	Lab. tech.	Murder	3 years
Subject 2	38	215	Druggist	Robbery	4 years
Subject 3	47	126	Doorkeeper	Kidnaping	10 years
Subject 4	31	173	Surg. nurse	Murder	8 years
Subject 5	42	172	Surg. nurse	Murder	4 years
Subject 6	33	130	Lab. tech.	Murder	9 years
Subject 7	30	140	Lab. tech.	Murder	11 years

PROCEDURE

For ten days, January 18 to January 30, 1931, a normal was established.

During the next ten days, January 30 to February 9, a quarter of a pound of cake was given to each of the seven subjects on going to bed.

For ten days, February 9 to February 20, a quarter of a pound of eggs or meats was given to each of the seven subjects before retiring.

During the last ten days of the experiment each of the seven subjects was given one ounce of butter on toast at bed time.

The movements during the sleeping periods for each of these three procedures were recorded on the kymograph and subsequently counted.

These figures are shown in the following tables:

CHART 1.—*Average Number of Movements Per Hour on Normal Diet*

Date	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Average for Group
Jan. 18	4.7	11.6	3.0	11.1	11.5	4.9	7.2	7.7
Jan. 19	3.4	11.1	4.6	11.2	12.5	4.1	8.4	7.9
Jan. 20	6.2	6.0	4.0	13.2	12.5	3.6	5.9	7.5
Jan. 21	4.1	9.0	3.7	9.9	11.3	4.4	8.1	7.2
Jan. 23	8.1	9.8	6.3	5.6	14.5	10.1	7.5	8.8
Jan. 24	5.0	7.7	5.1	11.3	8.5	3.0	6.4	6.7
Jan. 25	5.7	8.8	7.1	6.3	12.3	3.5	9.3	7.5
Jan. 26	4.8	12.1	....	12.1	10.3	3.7	5.4	8.0
Jan. 27	4.0	14.3	3.2	15.4	11.4	5.0	8.2	8.8
Jan. 29	6.6	11.2	3.3	11.2	10.1	5.3	6.7	7.8
Period Average								7.89

CHART 2.—*Average Number of Movements Per Hour on Carbohydrate Diet (One-Quarter Pound of Cake)*

Date	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Average for Group
Jan. 30	6.4	10.0	3.8	16.0	9.2	5.5	8.7	8.5
Jan. 31	....	8.3	4.1	16.4	11.2	5.5	5.6	8.5
Feb. 1	7.7	9.1	4.0	.....	9.0	6.0	7.7	7.3
Feb. 2	7.8	7.9	4.4	6.7	10.6	5.0	10.8	7.5
Feb. 3	6.6	12.3	5.8	10.4	10.2	6.2	7.8	8.4
Feb. 4	6.4	12.1	5.4	9.4	10.9	6.2	10.7	8.6
Feb. 5	6.3	11.7	6.4	10.9	10.0	6.5	9.6	8.8
Feb. 6	7.2	11.8	5.6	9.1	11.1	7.0	9.0	8.6
Feb. 7	10.2	13.0	3.6	10.1	14.0	5.3	11.1	9.6
Feb. 8	10.0	14.6	6.0	11.4	9.3	7.1	9.5	9.7
Period Average								8.56

CHART 3.—*Average Number of Movements Per Hour on a Protein Diet (One-Quarter Pound of Eggs or Meat)*

Date	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Average for Group
Feb. 9	9.3	12.0	4.0	12.0	11.3	6.3	9.3	9.1
Feb. 10	6.7	16.7	5.7	13.0	11.3	6.5	9.6	9.9
Feb. 11	6.0	9.7	4.4	11.4	10.6	5.5	9.4	8.1
Feb. 12	5.5	10.6	4.4	10.2	11.8	7.6	9.1	8.4
Feb. 13	6.0	15.7	4.0	11.0	11.1	6.0	10.4	9.1
Feb. 14	5.1	9.8	3.3	11.0	12.6	5.7	9.0	8.1
Feb. 16	9.3	11.2	4.1	15.0	12.8	6.0	9.3	9.6
Feb. 17	9.2	11.0	6.1	14.0	14.3	5.8	8.8	9.9
Feb. 18	10.5	9.8	5.3	9.7	10.2	5.6	9.6	8.7
Feb. 19	8.0	10.8	5.2	13.5	17.9	4.5	10.5	10.0
Period Average								9.0

CHART 4.—*Average Number of Movements Per Hour on a Fat Diet (One Ounce of Butter)*

Date	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Average for Group
Feb. 20	10.0	11.8	4.4	11.3	13.8	6.1	7.6	7.8
Feb. 21	9.2	13.0	4.0	.....	12.4	7.0	8.7	9.0
Feb. 22	8.3	11.4	3.0	.....	13.5	6.4	....	8.5
Feb. 24	8.8	18.6	2.3	13.3	12.0	4.9	7.9	9.6
Feb. 25	8.0	9.2	3.2	12.5	8.0	6.0	9.3	8.0
Feb. 26	....	9.8	4.4	10.0	13.6	5.0	8.1	8.5
Feb. 27	11.2	18.0	....	12.8	12.4	8.2	7.8	10.7
Feb. 28	9.2	11.4	6.3	9.8	13.0	6.2	6.6	8.9
Mar. 1	8.1	10.2	5.8	....	16.0	4.7	7.7	8.7
Mar. 2	6.6	8.5	....	....	10.6	6.2	7.7	7.9
Period Average								8.76

CHART 5.—*Summary of Average of All*

Normal—Nothing taken	7.89 movements per hour
Carbohydrate diet	8.56 movements per hour
Fatty diet	8.76 movements per hour
Protein diet	9.00 movements per hour

COMMENT

These figures would seem to indicate that a more restful sleep is had if nothing is eaten on going to bed.

But a protein diet causes more disturbance of rest than either one of fat or of carbohydrates.

Of the three, there is less restlessness with the taking of carbohydrates.

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FRACTURES OF THE OS CALCIS*

By MAYNARD C. HARDING, M. D.
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DISCUSSION *by Edward N. Reed, M. D., Santa Monica; Fred Fairchild, M. D., Woodland; Fraser L. Macpherson, M. D., San Diego.*

THE frequency of fractures of the os calcis is growing with the increase of all types of fracture. Its relative frequency seems to depend on the amount of construction in a given locality, since it is largely a fracture of falls from a height of ten feet or more. Ellison,[9] in 1927, stated that it constituted three-tenths of one per cent of all fractures. In a recent article he increased it to two per cent. Herman[4] estimated it at two per cent. My own experience places it at about one per cent.

Following Cotton's papers on the treatment of os calcis fractures in 1908 and 1911, not much had been written on the subject until my article in the *Journal of Bone and Joint Surgery* in 1926,[10] setting forth the method the author had used since 1917. This present paper deals with the further use of this method, with modifications suggested by experience.

As is well known, nearly all these fractures are caused by falls on the feet. A few may be direct crushes, or the posterior end of the heel may be bitten off by a shearing force such as a descending elevator.

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* Read before the General Surgery Section of the California Medical Association at the sixtieth annual session, San Francisco, April 27-30, 1931.