

INDIVIDUAL STUDY

A study of night calls in Jerusalem

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THE organization of a satisfactory medical service at night time seems to be fraught with difficulties all over the world. The problem may be divided into three areas; one, the service aspect, i.e. the difficulty of obtaining the services of physicians at night-time; two, the dissatisfaction of the population with the usually deficient arrangements made; and three, a general reluctance among physicians to have to go on home visits at night. It may well be that we are confronted here with a vicious circle; because physicians are not usually readily available for emergency night duty, and those who are have a low 'tolerance threshold' for such calls and regard them with considerable resentment, the population may have a feeling of helplessness and frustration which in turn increases the tension and prejudices on both sides. This subject is of interest from a number of different points of view, i.e. the epidemiological, clinical, social and psychological, as well as the administrative. While a few studies of the subject have been carried out, notably in Great Britain, there is little detailed knowledge either in Israel or elsewhere about the characteristics of the 'users' of such services, the type of illnesses, or the mechanisms leading to emergency calls.¹⁻⁷

The Jerusalem public has the following facilities for obtaining medical services at night:

1. The Israel Medical Association maintains a roster of physicians prepared to go out on night calls; the names of three of these are published daily in the newspaper.
2. The patient can either be taken directly to the Magen David Adom centre (MDA—the Israeli equivalent of the Red Cross), or a home visit can be requested by telephoning the MDA from 8 p.m. to 7 a.m. It is with this latter service that the present study deals.

The MDA services are nearly free of charge as most of the sums paid are refunded by the Health Insurance Funds. Thus, the population of Jerusalem can obtain the services of a physician during the night hours with extraordinary ease: all the caller has to do is to dial 101 (in this instance without the use of a special token if through a public telephone)—this number is prominently displayed in all telephone directories and telephone booths. Little or no screening is done by the MDA telephone operator. The present MDA emergency night call service which, at the time of the investigation, had been in operation for about a year in Western Jerusalem, seemed to offer a good opportunity to investigate some of the factors associated with such a service and to determine some of the mechanisms involved in such a service in at least one urban area in Israel.

For the purposes of this study the following objectives were formulated:

1. To determine the characteristics of the 'users' of the MDA night service; the diagnoses made and the action taken by the physicians.
2. To find out what happened to the patient on the day following the night call and what further action, if any, he took in regard to his illness.
3. To investigate the 'mechanism' producing an emergency night call.
4. To determine the degree of satisfaction of the population with the service.

Material and methods

We interviewed all 'users' in their homes on the afternoon following the night of the call. As it was not possible to interview all callers, we selected an area of Jerusalem constituting about 20 per cent of the total city population (1966—195,700). The selected area gives a fair cross-section of the total city population since it includes both oldtimers and new immigrants as well as various occupational groups. The survey was carried out from 1 January—31 March 1968. We would have liked to cover a period of 12 months in the study since Jerusalem shows marked climatic variations in the different seasons; it was not possible to do so, however, nor was it possible to carry out the study during one month in each of the different seasons; we therefore had to restrict the study to a three-month period during which there was rain, snow and cold.

Establishing the population figures for our sample region presented a complex problem which we overcame by making use of the Voters' Rolls kept by the Ministry of the Interior. Each city is divided into a number of different polling areas and the register is arranged in alphabetical order of the voters' names. We could thus extract those polling areas constituting our sample region for all adult voters over 18 years of age. The sex of the voter could be determined by his first name since there are only a very few names in Hebrew which might be both male and female. For the population below the age of 18 years we used the register prepared for the Jerusalem Municipality by the Ministry of the Interior. This is an alphabetic list of all children 0–18 years with their exact addresses, serving the Municipality for the planning of various services. Here we had to select those children whose address fell into our study area and to record their age and sex. Both these processes were time-consuming but were the only means of obtaining a denominator since we had quite arbitrarily delineated certain neighbourhoods in Jerusalem which do not appear as individual units in the national census data.

An interview schedule was drawn up and pre-tested. Out of the 541 callers, 501 home interviews were obtained. The reasons for not interviewing were:

In hospital	..	..	..	..	..	..	..	7
Dead	..	..	..	..	..	..	..	3
Address not found	..	..	..	..	..	..	..	13
Not home on three occasions	..	..	..	..	..	..	..	14
Refusals	..	..	..	..	..	..	..	4

Two interviewers visited the MDA each morning and extracted from the lists kept by the telephonist the names and addresses of the callers on the previous night. As the regular clinics and medical services of the various sick funds do not operate on Saturday, the MDA therefore serves to a great extent as a 'normal' service on that day; we therefore decided to interview only those callers who called on the MDA from Saturday evening to Friday. Only those callers were included who called for the services of the doctor from 8 p.m. to 7 a.m. since such calls were defined by us as urgent night calls. The interviewers explained to the respondents that the MDA service was concerned with the reasons for the emergency call, with what had happened to the patient on the following day, and with the satisfaction or dissatisfaction of the public with the service: As the interviewers had no knowledge of the diagnoses involved, there was no infringement of the principles of medical secrecy.

After the interview schedule had been completed by the interviewers, two of the authors, both of them physicians, extracted additional details from the doctors' sheets with regard to the diagnoses and action taken.

The 501 persons interviewed included 64 who had cancelled their call prior to the arrival of the doctor; this group was nevertheless interviewed since we were interested

in all emergency night calls regardless of the action taken after the call had been placed.

Findings

In table I the age and sex breakdown of the total population of the study area, the 'users' of the service and the rate per 1000 of this use during the three months of the study are given. There are differences in the rates of use of the service both by age and sex. In both sexes the rates are high from birth to nine years of age and again after the age of 70. In females, however, there is another peak from 15 to 39 years of age that is absent amongst the males.

TABLE I
TOTAL POPULATION OF THE AREA, 'USERS' OF THE SERVICE AND RATES OF USE BY AGE AND SEX
(rates per 1000 population)

Age	Male			Female			Total		
	Popula- tion	Users	Rate	Popula- tion	Users	Rate	Popula- tion	Users	Rate
0- 1	475	18	37.89	462	19	41.12	937	37	39.48
1- 4	1842	50	27.14	1657	48	28.96	3499	98	28.00
5- 9	1930	31	16.06	1738	19	10.93	3668	50	13.63
10-14	1774	14	7.89	1731	7	4.04	3505	21	5.99
15-19	1231	10	8.12	1243	14	11.26	2474	24	9.70
20-29	3149	19	6.03	3189	66	20.69	6338	85	13.41
30-39	2890	27	9.34	2908	48	16.50	5798	75	12.93
40-49	2336	17	7.27	2113	15	7.09	4449	32	7.19
50-59	1708	12	7.02	1430	21	14.67	3138	33	10.51
60-69	1353	13	9.60	1174	10	8.51	2527	23	9.10
70 +	594	9	15.15	618	12	19.41	1212	21	17.32
Total ..	19282	220	11.40	18263	279	15.27	37545	499*	13.29

*The totals in this and following tables do not tally as the unknowns have been excluded from all tables.

The medical diagnoses made by the examining doctor and the time of the call by age of the patient is seen in table II. The largest diagnostic category is that of the upper respiratory diseases (upper respiratory infection, influenza and tonsillitis); in children this category constitutes over two thirds of the total diagnoses. In adults another frequent diagnosis was that of 'anxiety states'. Over two thirds of the calls were made before midnight and during this period a majority of the diagnoses of the upper respiratory conditions were made in adults. The 'severe' conditions such as pneumonia, cardiovascular diseases, conditions associated with severe abdominal pain are spread fairly evenly over the total time span of the service.

The age group 20-39 years is analysed in more detail by sex and diagnosis in table III. The females exceed the males in almost every diagnostic category.

The action taken by the patient the following day is seen in table IV. Of the 431 persons for whom this fact was available only 25 returned to work on the day following the night call. Of the remaining 406, 151 (37 per cent) once again saw a doctor, either in their homes or in the clinic and a further 31 were in hospital.

Satisfaction expressed with the service is shown by the country of birth of the patient in table V. The persons of European origin expressed the highest degree of dissatisfaction while those from the Middle East or Asia were the most satisfied. The difference between these two groups is significant at the 5 per cent level. The respondents' positive statement about satisfaction was supported by additional findings; thus we

TABLE II
HOME VISITS MADE BY PHYSICIANS BY AGE OF PATIENT, TIME OF CALL AND DIAGNOSIS

Diagnosis	Time	Children (0-14 years)				Adults (15+ years)				Total
		Before 22.00	22.00-24.00	After 24.00	Total	Before 22.00	22.00-24.00	After 24.00	Total	
Influenza		8	—	3	11	29	9	4	42	53
Upper respiratory infection		36	10	22	68	23	11	3	37	105
Pneumonia		3	2	3	8	2	2	1	5	13
Tonsillitis		12	4	9	25	6	2	4	12	37
Otitis		6	10	4	20	1	1	2	4	24
Asthma		—	1	1	2	1	3	6	10	12
Cardiovascular diseases*		—	—	—	—	7	5	7	19	19
Abdominal pain		3	—	2	5	2	6	9	17	22
Acute gastroenteritis		—	2	4	6	2	2	12	16	22
Peptic ulcer		—	—	—	—	2	3	2	7	7
Cholecystopathies		—	—	—	—	2	—	3	5	5
Renal colic and urinary tract infection		—	—	—	—	4	3	7	14	14
Anxiety states		1	1	1	3	14	9	13	36	39
Diagnosis deferred		1	2	—	3	6	4	4	14	17
Other**		3	3	2	8	9	8	6	23	31
Total		73	35	51	159	110	68	83	261	420

*Myocardial infarction, congestive heart failure, cerebral vascular accident, hypertensive cardiovascular disease.

**Dysmenorrhoea, myalgia, trauma, children's diseases, abscess, allergy.

TABLE III
PATIENTS EXAMINED AGED 20-39 YEARS, BY SEX AND DIAGNOSIS

Diagnosis	Male	Female	Total
Influenza	11	17	28
Upper respiratory infection	4	17	21
Pneumonia	—	1	1
Tonsillitis	2	5	7
Otitis	1	3	4
Asthma	—	3	3
Cardiovascular diseases	3	—	3
Abdominal pain	1	6	7
Peptic ulcer	2	2	4
Acute gastroenteritis	4	7	11
Cholecystopathies	1	—	1
Renal colic and urinary tract infection	4	9	13
Anxiety states	1	13	14
Diagnosis deferred	2	4	6
Other	2	5	7
Female disorders	—	6	6
Mastitis	—	3	3
Total	38	101	139

compared the callers' estimates of the time-lapse between the call and the visit with the records kept by the personnel. An analysis of this shows a remarkable concordance.

In order to clarify what constitutes an emergency, respondents were asked about emergency signals for which they would call a physician urgently. The respondents

TABLE IV
PATIENTS BY DIAGNOSIS AND ACTION TAKEN ON DAY FOLLOWING REQUEST FOR VISIT

Diagnosis	Action	Stayed at home. Did not see doctor	Stayed at home. Called for doctor	Stayed at home. Went to see doctor	In hospital	Went to work	Total
Influenza		34	12	4	1	2	53
Upper respiratory infection		65	30	5	1	4	105
Pneumonia		3	6	1	3	—	13
Tonsillitis		27	7	3	—	—	37
Otitis		12	8	2	1	1	24
Asthma		2	4	2	4	—	12
Cardiovascular disease*.. .. .		9	2	1	6	1	19
Abdominal pain		8	9	2	2	1	22
Acute gastroenteritis		13	5	2	—	2	22
Peptic ulcer		1	3	1	1	1	7
Cholecystopathies		1	1	1	1	—	5
Renal colic and urinary tract infection		4	3	5	2	—	14
Anxiety states		21	7	3	—	8	39
Diagnosis deferred		14	8	1	5	—	28
Other**		10	8	5	3	5	31
Total		224	113	38	31	25	431

* Myocardial infarction, congestive heart failure, cerebral vascular accident, hypertensive cardiovascular disease.

**Dysmenorrhoea, myalgia, trauma, children's diseases, abscess, allergy.

were given a number of alternative symptoms such as fever, pain, bleeding, as occurring in babies, women and men. The question was put first in an open form and then as a closed question. The respondents were also asked whether or not they had taken any action themselves before deciding that the condition of the patient required professional attention. Another factor we considered was that of the occurrence of some unusual or disturbing event during the day preceding the call which resulted in the patient or his family reacting more strongly to a particular episode of illness than he might otherwise have done. Nothing of note was found here.

TABLE V
SATISFACTION WITH SERVICE BY COUNTRY OF BIRTH OF PATIENT

County of birth	Satisfaction		Total
	Satisfied	Not satisfied	
Europe	79 (71.1)	32 (28.8)	111
North Africa	71 (82.5)	15 (17.0)	86
Asia and Middle East	51 (87.9)	7 (12.0)	58
Israel	146 (80.2)	36 (19.7)	182
Total	347 (79.4)	90 (20.5)	437

Discussion

As we have seen in table I, the rates of use show considerable variations by age and sex. The heaviest use is found in the very young and the very old. It may be of interest here to compare our findings with those of Brotherston *et al.* in Scotland. We have standardized the latter study to a three-month period comparable to ours and to rates

per 1,000 of population; we nevertheless bring these comparisons with all due reservations in regard to differences of methods, seasonal variations and so on. Although the overall rate is nearly identical, i.e. 13.29 per 1,000 in Jerusalem and 14.07 in Scotland, there is, nevertheless, an interesting difference in the two studies in the use of the service when analysed for age. Whereas in our study the age-group 0–5 years has a rate of 30.43, the Brotherston study finds a rate of 15.2 for this age-group. On the other hand, the use of the service by the elderly, the Brotherston study shows a rate of 18.8 whereas in our study this age-group has a rate of 10.2. The age groups 5–14 and 15–44 years are nearly identical in the two studies. A possible hint to the explanation of these findings may lie in the preponderance of influenza and upper respiratory disorders in our survey (winter months) which to a large extent in our material comprised calls for babies and toddlers. On the other hand the Brotherston study shows a much higher rate of the cardiovascular disorders—12 per cent : 4.5 per cent. The overall sex distribution in the users in our study is exactly the same as in the Brotherston study—45 per cent males *versus* 55 per cent females.

Trying to throw some light on the comparatively high use of this kind of service by females aged 20–39 years, as is seen in table I, we analysed this group separately in table III. Although there were only nine cases which could be attributed to gynaecological disorders, in nearly every other disease group the females scored considerably higher than the males, outstanding examples here being respiratory diseases—18 *versus* 46, abdominal pain—1 *versus* 6, and anxiety states—1 *versus* 13. As the 20–39 year age-group is that of mothers with young children, it might be reasonable to assume that the family is anxious, as may be the patient herself, to obtain immediate treatment for any condition likely to incapacitate the mother. This possibility was supported to some extent when we analysed who the person was who actually made the decision to call the doctor: We found that where a woman in this age-group was the patient, the decision to call the emergency service was made in an equal number of cases by the husband (37 cases), by the woman herself (39 cases) or by a member of the immediate family (30 cases). This possibly expresses the anxiety of the family members for the health of the mother. Where, however, a male in this age-group was the patient, the decision to make the call was taken in the great majority of cases by the patient himself, in 28 out of 35 instances. Nevertheless, despite all these inferences, this finding is still largely unexplained and needs further investigation.

The diagnoses as recorded by the physicians can be seen in table II. It is of course understandable that the respiratory diseases occupy a prominent place in the list of illnesses since this investigation was carried out during the wet and cold winter months of January–March. The somewhat high proportion of calls for conditions which were diagnosed as “anxiety states” in one way or another may look surprising on first sight. If we remember, though, that we are dealing with an emergency night call situation and if we take into consideration the high percentage of emotional problems brought to the general practitioner in his usual daytime practice, this figure is not unexpected.

As can also be seen in table II, we analysed the diagnoses by comparing children and adults and by time of call. Two thirds of the calls were made in the period between 8 p.m. and midnight, an identical finding with that of McVie in Edinburgh.⁸ A surprising point emerges when we look at acute gastroenteritis for which, in both children and adults, the majority of calls (16 out of 22) were made in the period after midnight; it looks to us that we are confronted here with a situation of acute food poisoning rather than one of acute gastroenteritis.

We tried to assess, although of necessity in a very general manner, the quality of medical care rendered by physicians in this service and for this purpose we looked at both the diagnosis as stated by the physician as well as at the action taken and recorded

by him. Although the precise nature of the situation at the time of the doctor's call and the reasons motivating him to take the action he took could not be known to us in detail, two facts in regard to medical care nevertheless seem to have emerged; the cases sent to hospital—42 out of 446—seem to have been justifiable hospitalizations, as judged by the fact that all of them were actually admitted and that 31 out of the 42 were still in hospital on the afternoon of the day following the night call. Secondly, looking at the use of antibiotics we found that antibiotic therapy was prescribed in all cases of infectious diseases where a specific diagnosis was made; thus, for example, out of 40 cases of tonsillitis all received antibiotics, and out of 22 cases of otitis, 21 received antibiotics. This therapy was used in only one third of cases where the diagnosis of influenza or upper respiratory infections was made (41 out of 120 cases); it therefore seems to us that these were probably the cases of the young child and the elderly person where such therapy is indicated. There was little antibiotic prescription in cases where this was not justified on the basis of the stated diagnosis and seems, therefore, to have been indicated where given.

Looking at the "fate" of the patient for whom the emergency call was made (table IV), we find that out of 431 cases only 25 returned to work the next day—a fact which may or may not point to the severity of the condition during the night; 31 out of 42 were still in hospital. Of the 375 who stayed at home the next day, 113 called in another physician during the day and a further 38 went to see a physician in a clinic; 224 stayed at home without calling another physician. Thirty-eight per cent of those patients who were not hospitalized saw a doctor again the next day. This seems to indicate a fairly heavy re-use of medical services within a 24-hour period.

The degree of satisfaction of the population with the MDA night emergency service is given in table V. Although we find significant differences in the degree of satisfaction when analysed for country of origin of the patient, it still remains a fact that the great majority of the total population of users (79.4 per cent) expressed considerable satisfaction with the service. Those who were not satisfied suggested reasons which, by their nature, would be indeed difficult to meet or change, i.e., doctor too young, doctor too old, patient did not recover immediately, and so on. A further point in this direction is that those calls which were cancelled (64) were in most cases cancelled after the telephonist informed the caller that a considerable time might elapse until the home visit could be made. In most cases, the population accepted this as reasonable and little or no dissatisfaction was engendered. The reasons for cancellation were overwhelmingly found to be an improvement in the condition of the patient who in such cases was more often than not a young child, or the parents taking the patient directly to the MDA centre.

The investigators were also very interested in throwing some light on the mechanisms involved in a particular situation developing into an "emergency" situation for the patient and/or his family. We have to distinguish here between two types of situations. One is the disease event which begins at any time after 7 or 8 p.m. in which the patient or his family thinks immediate treatment is necessary and for which they make an emergency call. The second type is the event which started either during the day or even a day or two before, for which a physician may or may not have been consulted already, and in which the patient and his family decide that an emergency call during the night is necessary. The first event is, at least in the eyes of the patient, a "true" emergency, regardless of whether we are confronted with a myocardial infarction, a 'flu or an abdominal pain; in all these cases the caller thinks that immediate treatment is necessary. The position in the second type of event is more complex: the family and the patient may wish to check on the treatment prescribed by the previous physician; the condition of the patient may have either not yet improved—contrary to the expectations of the family—or may have actually, or in the eyes of the family, deteriorated. We are

therefore, not really confronted in this latter type of event with what we could strictly call an emergency call.

Support of the theory of prior events during the day having a possible influence on emergency has been suggested by a study of accidental poisonings in children, where it was shown that a change in daily routine may precipitate the occurrence of such types of home accidents.⁹ After careful analysis of the material received, we have to admit that we did not obtain anything of significance. The emergency "signs" suggested by the respondents were in line with what the population apparently identifies with the image of a "sick" person—interestingly enough, without apparent relationship to cultural or social background. In our study we could also find no evidence to support the hypothesis that a break in routine in the life of the family on the day preceding the night call had occurred, either because no such link exists or because our technique of questioning was defective. As we regard this part of our investigation as one of the most important aspects of the whole question of emergency calls, we shall discuss it in more detail in a separate publication.

In the second type of event discussed above, the main factors operating seem to be the following: Unreasonable expectations of modern medicine—i.e. an expectation of immediate improvement of the patient's condition after taking one or two tablets; ignorance on the part of patients and their families about the natural course of the common infectious illness; a complexity of factors pertaining to the problem of doctor-patient relationships in general—i.e. lack of confidence in the physician, desire to check on the physician, and so on. This factor may also be operative in causing 38 per cent of the non-hospitalized patients to see a doctor the next day.

In planning our study and formulating our objectives we made two covert, basic assumptions, viz., that there would be a high use of the emergency service and that, on the whole, many of these calls would not be shown to be justified on medical grounds. Our first contention was on the whole borne out as our figures showed a heavy use of the service studied—although within the same range as that found by other authors. In regard to our second contention, our results seemed to indicate that little abuse of the service could be demonstrated. Looking at reports of similar studies we found that this finding duplicates that of most other investigators. In the majority of instances the calling of a doctor had been justified. The fact that the vast majority of patients (about 95 per cent) were still at home and under treatment, together with the hospitalization rate of 10 per cent, seems to us to support this conclusion. Brotherston concluded that of the 254 emergency calls he analysed, there was an annual rate of "about two unnecessary calls per 1,000 patients"; he goes on to say "there was no evidence to suggest that patients were making unnecessary calls". On the other hand, however, Jacobs concluded from his data that there seems to be considerable abuse of the emergency services he studied. Our interpretation of his material, however, leads us to a different conclusion: If the three groups of diagnoses of influenza, tonsillitis and pneumonia are regarded as "justifying" an emergency call—as other investigators have done—the total of "unnecessary" calls in Jacobs' data would be reduced to a figure similar to that of other investigators.

Jacobs has expressed the opinion that "the conditions seen at late calls are similar in incidence, diagnosis and severity to the conditions seen as routine items in the (daily) practice"; Brotherston states that "night calls . . . do not basically differ from routine practice". The findings of our study concur with this.

Studying the use of the night call emergency service by the population of a region of Jerusalem, it seems to us that a part, both of emergency calls and of the repeated use of physicians' services, has its roots in the apparently unreasonable expectations and lack

of knowledge of the population about the natural course of the common infectious diseases. This may also be true of day-time medical services, a hypothesis which requires further study.

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REFERENCES

1. Clyne, M. B. (1961). *Night calls: A study in general practice*. London. Tavistock Publications.
2. Brotherston, J. H. F., and Chave, S. P. H. (1956). *Brit. J. prev. soc. Med.* **10**, 200.
3. Brotherston, J. H. F. (1959). *Brit. med. J.* **2**, 1169.
4. Jacob, A. (1963). *J. Coll. gen. Practit.* **6**, 272.
5. Jacob, A. (1963). *Ibid.* **6**, 436.
6. Fry, J. (1952). *Brit. med. J.* **2**, 249.
7. Zive, P. (1968). *Harefuah*, **64**, 4, 140.
8. McVie in Clyne, M. B. (1961). *Night calls: A study in general practice*. London. Tavistock Publications.
9. Lehrer, T. (1968). Chemical poisoning among children (Social Aspect)—in Hebrew. Dissertation prepared for the M.P.H. degree.

Avicenna on bathing

410. Immersion in hot sand, oil baths, spraying of water over the face; standing or running or walking rapidly, or jumping in the heat of the burning sun—all these are powerful agents for removing superfluities, and for producing sweating, dispersing flatulence, and lax swellings and dropsies. They are beneficial for asthma, for orthopnoea. They invigorate the brain (whose temperament is cold) and relieve inveterate "cold" headache.

If the seat of the bath is dry, and floor is left wet, the bath will benefit cases of sciatica, lumbar pain, uterine obstruction. It has a cleansing effect on the womb.

411. *Sun-baths*.—One must not remain too long in the sun, or else the body will become dry, thick and hard, as the sun acts like a cautery upon the pores of the skin, and obstructs the outflow of the insensible perspiration. The sun burns the skin more if one stands still in it, than if one moves about, and so it inhibits the dissipation of the sensible perspiration still more.

412. *Sea-sand baths, in the sun*.—These are more efficient for drying the humours lodged in the skin. Such a bath may be used in various ways: one may sit on the sand, or bury oneself in it, or sprinkle it over the body. In whatever way it is employed, the same beneficial effect is experienced in all the above-named disease. If the sand is sprinkled over the body, little by little, it removes pain and other effects of insolation. In the end, there is an extremely marked drying effect on the body.

A treatise on the canon of medicine of Avicenna incorporating a translation of the first book. O. Cameron Gruner, M.D. London. Luzac & Co. 1930. p. 238.