

reconciled to is the manner in which death occurs and the fact that it so often takes place prematurely; for man has set up standards which determine what he considers he is entitled to expect. But the standards used have only local and contemporary significance. To be of any real value they should be a great deal more comprehensive—taking into account patterns of life and the incidence of morbidity applicable to all mankind and over a very long period of time.

In practice we almost completely ignore such considerations: we can develop—and indeed we do develop—a remarkable degree of imperturbability about the morbidity and the expectation of life that existed say in medieval England or among the tens of thousands of destitute people in Hong Kong just now; and when we hear of disaster overtaking a ship or an aircraft and the sudden extinction of a hundred lives, how long do the thoughts of the calamity remain in our minds? Individually we are able to note morbidity—even on a massive scale—and yet to be scarcely affected by it so long as it is sufficiently remote from us.

If there is design and purpose in psychological as well as physical mechanisms, this state of insulation that protects our minds from the excessive impact of morbidity in the world is presumably intended for our welfare—to prevent too great a sense of oppression and despondency that might overwhelm us. I do not, of course, suggest that we are entirely unaffected by the impact of morbidity—however remote the incidents may be. On the contrary, it would appear that we are intended to be affected by all that we discover—in this field and in many others—but only to an extent that promotes the master plan for the gradual emergence of the spirit of man in its ultimate and perfect form; and I am prepared to believe that what we call morbidity constitutes a vast and heterogeneous group of stimuli which have their part to play in this process.

MORBIDITY AND EVOLUTION

In saying this I am assuming that it is possible for man to make adjustments in his way of thinking—and in particular in his attitude to the significance of morbidity. If we do not allow that within certain limits man—as we know him now—can choose, then discussion of man's attitude to morbidity is futile; for it is obvious that in such circumstances even our judgments would become foregone conclusions. I myself accept the concept of free-will—though of a limited kind and conditioned by circumstances related to man's evolutionary state at any moment in the record of his existence. I therefore feel entitled to urge a more critical attitude in what we accept from religion regarding the phenomenon of morbidity.

Briefly, I reject any doctrine which declares that *morbidity was not intended* or that it emanates from an independent source—a separate creative force which is inherently evil. I am much more disposed to regard all phenomena as belonging to a pattern deliberately contrived.

There are clearly relationships between different species of living organisms, and the nature of these relationships—often enough examples of the genesis of morbidity—is explored systematically in the sciences we call bacteriology, parasitology, virology, mycology, and other studies. In the midst of this extensive field of academic exploration there are indications that man has acquired an attitude of resentment towards the phenomenon of inter-relationships. Thus there are many who regard this matter as a fault in the fabric of Creation and consequently

seek relief in the language of the cynic; others see no alternative to an attitude of stoicism or fatalism; and in the principal religious dogmas the apparent difficulty is accepted as a mystery that calls for the exhibition of courage and faith—qualities which are sedulously differentiated from fatalism.

For myself, I believe that we can deliberately set out to alter the existing circumstances (in our context, in terms of health and disease); but such distortions are likely to be very slight in degree, very restricted in their area of operation, and only momentary in their duration—in relation to geologic backgrounds. Nevertheless they may be highly important to us as individuals—acutely concerned with the day-to-day calibrations which are marked on the human component that defines existence.

Special Articles

CHANGE OF DIET OF YEMENITE JEWS IN RELATION TO DIABETES AND ISCHÆMIC HEART-DISEASE

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A SIGNIFICANTLY greater prevalence of diabetes mellitus (Cohen 1959, 1961), ischæmic heart-disease (Dreyfus 1953, Toor et al. 1960, Cohen et al. 1960), hypertension (Cohen et al. 1960), and raised plasma cholesterol and β -lipoproteins (Toor et al. 1954, 1957, Brunner et al. 1955) has been found among the settled Yemenites who have lived in Israel for over twenty-five years, or were born in Israel, than in the newcomer Yemenites who have been in the country for less than ten years.

Some epidemiological studies have shown that populations with high rates of ischæmic heart-disease have diets rich in fats and animal proteins (Keys 1953, 1957, Keys et al. 1958, Bronte-Stewart 1958, Olson 1960). Other studies have suggested that other factors are equally closely related to the incidence of ischæmic heart-disease (Yudkin 1957, Yerushalmy and Hilleboe 1957). Since most of these studies were based on comparison of different groups of people, many factors may be responsible for the differences between them (Groen et al. 1952, Dock 1960).

We have investigated the pattern of the diet of Yemenite Jews as eaten in the Yemen and as eaten in Israel, so as to ascertain whether the greater prevalence of diabetes and ischæmic heart-disease after living in Israel can be attributed to a change of diet.

Methods

As a preliminary, we questioned hundreds of Yemenites on their food habits while in the Yemen, and we found two striking features in the previous diet mentioned by all of them. First, the main source of fat in the Yemen had been mutton fat, beef fat, and *Samne* (i.e., butter preserved by evaporation of its water content). Secondly, the quantity of sugar used in the Yemen had been negligible.

COMPARISON OF BUTTER AND SAMNE

	Butter	Samne
Iodine value	32	36
Acidity value	0.9	0.6
Reichert value (sol. Vol. acid)	21.4	29.4
Polensky value (Insol. Vol. acid)	2.0	2.2
Water	11.3	0

A more detailed quantitative survey was then made with the help of a dietitian who herself had arrived from Yemen about ten years ago but was trained in Israel, and who was accordingly familiar with food habits both in the Yemen and in Israel.

The families surveyed consisted of two groups:

(a) 20 Yemenite families in Rosh Haayin and Kiryat Yearim, who had lived in Israel for less than ten years, were questioned on their diet in the Yemen. This was done by the "recollection" method—i.e., reconstructing the quantities of food cooked by the housewife, checking the volume of the utensils they brought over with them, and checking these quantities with the husband, who used to purchase the materials. This was helpful, since in this group the husband is the only one who purchases all the food. Thus we had as good a control as possible on the estimates of the housewife.

(b) 20 Yemenite families in Jerusalem, who had lived in Israel for more than twenty-five years, were surveyed on their present diet. They were visited daily during a whole week by the dietitian, who noted down daily quantities consumed by the families according to a detailed questionnaire. For this purpose daily and weekly purchases were checked against the daily menus and the amounts found in provisions and cooked dishes in the kitchen. These food quantities were converted into nutrients by using the Food Composition Tables published by the nutrition department of the Israeli Ministry of Education:

Fats were subdivided into: (1) fat of animal origin; (2) margarine, and (3) oil, which in Israel during the last ten years has consisted of soya, sesame, and olive oil.

Proteins were subdivided into animal and vegetable.

Carbohydrates were subclassified under: (1) total carbohydrates; (2) sucrose; and (3) monosaccharide and disaccharide, which includes carbohydrates from fruits, vegetables, milk, honey, and sucrose.

Waste was taken into account by using the "as purchased" content of the foods.

We compared these two groups with a further two groups derived from another survey* of weighed food intake:

(c) 12 Yemenite families from Rosh Haayin who had lived in Israel for less than ten years.

(d) 19 families of European origin who had lived in Israel for more than ten years.

The weight and height of unselected 210 new immigrants (100 males and 110 females) and 235 settled Yemenites (110 males and 125 females) over 30 years of age were compared with mean weight of same height, age, and sex, according to the Actuarial Society of America, 1912 (table II).

* Bavly, S. Food Consumption and Levels of Nutrition of the Rural Population in Israel (to be published).

TABLE II—COMPARATIVE WEIGHT OF 210 (100 MALE AND 110 FEMALE) NEW IMMIGRANTS AND 235 (110 MALE AND 125 FEMALE) OLD SETTLED YEMENITES OVER 30 YEARS OF AGE

Comparative weight is the weight of the Yemenite minus the mean weight of whites of the same height, age, and sex. Individuals over 55 years were compared with the mean given for 55 years, according to Actuarial Society of America, 1912.

	Males		Females	
	Immigrants	Settlers	Immigrants	Settlers
Mean weight (kg.) . . .	56.5 ± 9.1	64.9 ± 13.2	51.3 ± 9.1	59.5 ± 9.8
Mean height (cm.)	162.2 ± 6.5	160.3 ± 7.6	147.6 ± 6.9	150.3 ± 7.3

Results

The intakes of nutrients are given in table I. Compared with their diet in the Yemen, the diet of Yemenites after long residence in Israel shows:

1. Slightly increased consumption in total calories. This is reflected in increase in average body-weight (table II).

2. No change in total protein.

3. In Yemen, fats were mainly or solely of animal origin—*samne*, milk, mutton, beef, and very few eggs. Vegetable oil was rarely used, and then only for baking special bread for the sabbath and festivals. The amount of fat from animal sources consumed in Yemen was similar to the amount of animal fat plus margarine consumed by the old settled Yemenites in Israel. In Israel there is some increase in oil consumption and consequently in total fat.

4. The carbohydrates consumed in the Yemen were mainly or solely starch—almost no sugar was consumed. In Israel there is a striking increase in sugar consumption, though little increase in total carbohydrates.

5. The above differences hold true also when comparing the diet of the Yemen with the diet of settlers of European origin.

Discussion

Data about the diet in the Yemen are based on recollection, and their accuracy is therefore questionable. But, besides the groups mentioned, we asked hundreds of Yemenites about their diet in Yemen and received consistent answers. Since precautions were taken for checking the data with different members of the family, it may be assumed that the results are reliable qualitatively, and approximately quantitatively.

The fat consumed by Yemenites in Yemen was mainly of animal origin, and in quantity it was not much less than the animal fat plus margarine consumed by the settled Yemenites and settlers of European origin. Yemenites and European settlers in Israel consume far more oil (soya, sesame, and olive) than the Yemenites in Yemen. Thus neither the fat content of the diet nor its nature explains why ischaemic heart-disease and diabetes are relatively rare in the Yemenite new immigrants.

Toor et al. (1954) studied in 1953–54 the diets in 55 families recently arrived from Yemen, and their figure for the fat content was 30 g. per head per day. They did not

TABLE I—FOOD INTAKE PER HEAD PER DAY

Groups	No. of families	No. of adults (15 yr. +)	No. of children (15 yr. -)	Calories	Protein		Fat				Carbohydrates			
					Total (g.)	Animal (%)	Animal (g.)	Animal + margarine (g.)	Oil (g.)	Oil (% of total fat)	Total (g.)	Mono- and disaccharides (g.)	Sucrose (g.)	% of total calories
Yemenites, in Yemen ..	20	108	48	2237 ± 98†	80 ± 3.6	37	43 ± 5	43 ± 5	14 ± 2	25	343 ± 15	26	6.6 ± 1	58
Yemenites, old settlers ..	20	112	66	2559 ± 118	86 ± 4.4	46	42 ± 7	51 ± 3	30 ± 3	37	377 ± 21	154	63 ± 6	59
Yemenites, new immigrants ..	12	64	38	2468 ± 120	78 ± 4	49	43 ± 8	49 ± 12	21 ± 2	33	373 ± 30	76	51 ± 3	56
Europeans, old settlers ..	19	62	50	2648 ± 171	80 ± 4	47	40 ± 6	52 ± 4	32 ± 4	38	389 ± 32	167	92 ± 2	59

† Standard deviation of the mean.

specify the proportion of fat derived from animal sources. Our figure for fat in the diet in Yemen is 43 g. The difference may be explained by the fact that when Toor et al. made their study Israel was on rations, and the fat supplied was mainly margarine: not being used to it, the new immigrants may have consumed less than their rations. Their figures for the old settlers, as well as those of Brunner and Loebel (1958), are much the same as ours as regards both quantity and quality. Our results do not support the conclusion reached by these groups of workers that the amount or the nature of the fat consumed by the Yemenites in Yemen protected them against ischæmic heart-disease. Their conclusion is the more difficult to maintain because of the high percentage of oil in the fat in the diet of settled Yemenites, in contrast to the Yemenites in Yemen who consumed very little oil.

The total caloric intake was less in Yemen than in Israel, and this is reflected in the increase in body-weight in the old settled Yemenites (table II). However, the diet in Yemen was by no means a starvation or semi-starvation diet, and cannot account for the low cholesterol and β -lipoprotein found in this group (Portman and Stare 1959); nor is the Yemenites' diet in Israel an excessive one.

One of the main characteristics of the Yemenite diet is the *hilbe* (*Trigonella fenugracum*) which they use as a spice in all their meals. This might be protective against diabetes and ischæmic heart-disease in the newcomer Yemenites; but our study shows that the amount of *hilbe* and other spices consumed by the old settled Yemenites is no different from that consumed in the Yemen.

A significant change in the diet after arriving in Israel is that far more sugar is consumed, though the percentage of calories derived from carbohydrates is little higher. Emerson and Larimore (1924) showed a close relation between sucrose consumption and the death-rate from diabetes in the United States, Great Britain, and Paris. Mills (1930) did not agree with Emerson and Larimore, but said: "It is to be noted, however, that of the thirteen countries highest in consumption of sugar, eleven are found among the thirteen highest in death rate from diabetes." Yudkin (1957) has found that "there is a better relationship with intake of sugar than with any other nutrient we have examined in the relationship between diet and the incidence of death from coronary disease" in different countries. Sucrose has been found to cause an increase in the plasma-cholesterol and β -lipoproteins in animals (Portman et al. 1956, Harper and Elvehjem 1957, Poliack 1958). If a nutrient is an ætiological factor in ischæmic heart-disease or diabetes, the increased consumption of sucrose *might* be responsible, directly or indirectly, for the higher prevalence of these diseases in those Yemenites who have lived for many years in Israel.

Summary

The diet of Yemenite Jews in the Yemen has been compared, retrospectively, with the diet of Yemenite Jews long resident in Israel.

Fat consumed in the Yemen was mainly of animal origin. Its quantity was much the same as the total of animal fat and margarine consumed by Jews living in Israel; but Yemenites in Israel consume daily, in addition, about 16 g. of oil, derived from soya, olive, and sesame. Thus neither the nature nor the amount of fat consumed by the Yemenite Jews in Yemen provides an obvious explanation of why they have less diabetes and ischæmic

heart-disease than the Yemenites who have been long settled in Israel.

There is no significant difference in the amount of protein consumed in the Yemen and in Israel.

Whereas in the Yemen no sugar was eaten, about 20% of the carbohydrates taken by Yemenites in Israel is in the form of sucrose. No difference was apparent in the total amount of carbohydrates consumed or in the proportion of calories derived from carbohydrates.

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REFERENCES

- Bronte-Stewart, B. (1958) *Brit. med. Bull.* **14**, 243.
 Brunner, D., Loebel, K. (1958) *Ann. intern. Med.* **49**, 732.
 — — Fischer, M., Schick, G. (1955) *Harefuah*, **48**, 1.
 Cohen, A. M. (1959) *Israel med. J.* **19**, 137.
 — (1961) *Metabolism*, **10**, 50.
 — Neumann, E., Michaelson, J. C. (1960) *Lancet*, ii, 1050.
 Dock, W. (1960) *J. clin. Nutr.* **8**, 206.
 Dreyfus, F. (1953) *Amer. Heart J.* **47**, 749.
 Emerson, H., Larimore, L. D. (1924) *Arch. intern. Med.* **34**, 585.
 Groen, J. J., Tjong, B. K., Kamminga, C. E., Willebrands, A. F. (1952) *Voeding*, **13**, 556.
 Harper, A. E., Elvehjem, C. A. (1957) *Agric. Food Chem.* **5**, 754.
 Keys, A. (1953) *Bull. Univ. Minn. Hosp.* **24**, 376.
 — (1957) *J. Amer. med. Ass.* **164**, 1912.
 — Kimura, N., Kusukawa, A., Bronte-Stewart, B., Larson, N., Keys, M. H. (1958) *Ann. intern. Med.* **48**, 83.
 Mills, C. A. (1930) *Arch. intern. Med.* **46**, 582.
 Olson, R. E. (1960) *Circulation*, **22**, 453.
 Poliack, O. J. (1958) *ibid.* **18**, 488.
 Portman, O. W., Elanor, Y. L., Bruno, D. (1956) *Proc. Soc. exp. Biol., N.Y.* **91**, 321.
 — Stare, F. J. (1959) *Phys. Rev.* **39**, 407.
 Toor, M., Agmon, J., Allalouf, D. (1954) *Bull. res. Coun. Israel*, **4**, 202.
 — Katchalsky, A., Agmon, J., Allalouf, D. (1957) *Lancet*, i, 1270.
 — — — (1960) *Circulation*, **22**, 265.
 Yerushalmy, A., Hilleboe, H. E. (1957) *N.Y. St. J. Med.* **57**, 2343.
 Yudkin, J. (1957) *Lancet*, ii, 155.

THE BRIDGMAN UNIT FOR MOTHERS AND BABIES

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WHEN confinement takes place at home it is customary and natural for the baby to be nursed in a cot by the mother's bed, and a similar arrangement is found in many hospitals. On the other hand both in Britain and on the Continent it is not unusual to find maternity units where babies are kept separate from their mothers in ward nurseries.

In hospital practice neither arrangement is satisfactory. The "rooming-in" system has a strong emotional appeal, but babies nursed in open wards are exposed to a variety of infections. A procession of people pass through the ward each day—doctors, nurses, students, physiotherapists, Red Cross workers, cleaners, visitors and others. All this movement creates dust which is liable to contain resistant staphylococci. Equally important are the respiratory infections brought into the wards by these people. Some control can be exercised over hospital staff, but it is quite impossible to maintain an effective check on patients' visitors. The busy ward is not a favourable environment for the newborn baby.

The puerperal mother needs rest and quiet but is unlikely to get this in a busy lying-in ward. Constant interruption and noise are disturbing features of our hospitals, and common causes of complaint.^{1 2} With four,

1. *Times*, March 23, 1960.

2. Pattern of the In-patient's Day. H.M. Stationery Office, 1961.