3. It is without effect on the bowel.
4. It causes the minimum disturbance of the acid-base equilibrium of the body and of the mineral metabolism.

For these reasons it is superior to sodium bicarbonate, magnesium carbonate or magnesium hydrate. It is practically foolproof in the hands of the patient. It is best used in the form of compressed tablets which disintegrate readily and which contain a very small amount of a carminative, such as oil of cinnamon.

HEALTH OF A CARNIVOROUS RACE

A STUDY OF THE ESKIMO

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In view of the present trend of thought away from the former conception of nephritis as a purely renal disease, and bearing in mind particularly the revision of attitude toward the rôle of protein, especially of animal origin, in the production of renal and vascular disease, I considered it worth while to make a cardiovascular and renal survey of a group of people subsisting exclusively on meat. The opportunity presented itself during the MacMillan arctic expedition of 1926, where we were in close contact with the Eskimos of northern Labrador and of Greenland.

Furthermore, since the vitamins have assumed a position of such medical and economic importance, and their sources are as yet not wholly understood, evidences of scurvy and rickets were sought and an examination was made of food sources and of food composition and preparation when these conditions were found.

Information was obtained from two sources: by personal observation and examination of Eskimos, and from the medical records and knowledge of the Danish physicians in Greenland. Denmark owns Greenland and exerts a benevolent control over the natives, supplying, among many other things, excellent hospitals and physicians in a number of the settlements in southern and central Greenland. In the northern portion there are no settlements and the Eskimos are virtually isolated, seeing only an occasional explorer or Danish trader. It was through these Danish physicians that I had the opportunity of examining a large number of Eskimos under hospital conditions with laboratory facilities at hand, as well as examining hospital records for many years to ascertain the frequency of the diseases that I was studying.

These settlements are the capitals of the provinces, having a governor and his family, a preacher, a physician and several other officials, totaling from twenty to perhaps forty Danes. Some Eskimos are employed as house servants and laborers and have access to some European food, though in most cases it is very little. Aside from these, all Eskimos live, and have done so since being weaned, on an exclusively carnivorous diet, if fish is included. There is no edible vegetation. Their diet includes the meat of whale, walrus, seal, caribou, musk ox, arctic hare, polar bear, fox, ptarmigan, and the numerous sea birds, geese, duck, auks, gulls and a variety of others, and, finally, fish, all eaten usually (and preferably) raw. Contrary to general opinion, the Eskimo eats relatively little fat or blubber. This portion is used for its oil, in lighting and warming the domiciles, in melting ice and snow for drinking, and to a much less extent in cooking food. He much prefers red meat, eating the flesh and liver. With inadequate supply he eats everything, including entrails—these usually being the portions for the dogs. For some reason, polar bear liver is poison; numerous experiences attest this fact, and the dogs, even though starving, will leave it untouched.

These people, then, were examined for evidences of renal and vascular disease. Ages are difficult to determine, as few can count, and they do not keep an exact record of their years. Often it was fixed with relation to some known event, such as the presence on their shores of a certain boat or person. However, we chose adults, male and female, excluding those who had been for any time in the Danish settlements, and examined them as carefully as the circumstances and facilities permitted. At times the Danish physician would herd in practically every adult in the settlement and we would have complete examinations in the hospital. At other times it was done aboard the *Bowdoin,* in the forecastle, or even on deck, stripped to the waist, and smiling; or, again, ashore in a rock or skin hut.

The results show conclusively that there is no unusual prevalence of vascular or renal disease. Among 142 adults between the ages of 40 and 60 who were completely examined, the average blood pressure was 129 systolic and 76 diastolic. The highest pressure found was 170 systolic and 100 diastolic. There were eight others whose systolic pressures were above 140, of which six were below 150 and the other two below 160.

In the urine, albumin was found in twelve, excluding cases with pus and no clinical evidence of circulatory disease. Of these twelve, only three were of the group whose pressures were above 140 systolic. The other nine had traces or moderate amounts of serum albumin and no increased pressure.

Microscopic examinations could not be made in all these cases. Of the nine hypertensions and the nine of albuminuria without hypertension, casts were found in two of the three patients who had both hypertension and albumin, in two of the remaining six who had hypertension, and in three of the nine who had albuminuria with normal pressures. Of seventy-three more microscopic examinations of persons with neither albumin nor hypertension, four revealed casts.

Edema of undoubted nephritic origin was seen in only one case. This involved the exclusion of several cases due to cardiac disease, varicose veins and phlebitis.

Nine persons authentically reputed to be over 60 years old were examined, and in only one was there albumin in the urine; in two were casts found, and in none was the systolic blood pressure above 140.

Critical examination of records in 588 hospital cases showed on physical examination edema due to nephritis in seven cases, and death from cerebral accidents and nephritic coma in five. Unfortunately the total number of deaths was not counted, and these figures are not at present available.

These people lead a life of great physical activity, a large number of the men dying by violence, accident, starvation or freezing, before old age comes, exposed to the severest extremes of cold. They remain for hours and days in their kaiaks, separated from icy water by only a membrane of sealskin. They frequently alternate between feast (when they eat to capacity) and famine. In view of these things, together with their extraordinary strength and endurance, the men often traveling twenty-four and thirty-six hours continuously without rest or food, there can, I believe, be no other conclusion than that, under their conditions of life, an

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exclusively carnivorous diet does not predispose to renal or vascular disease.

With regard to conditions ascribed to a vitamin deficiency, an interesting situation was revealed. Among these primitive, carnivorous people there is neither scurvy nor rickets. Children are nursed for four and not infrequently six years; that is, until their teeth are strong enough to eat meat. Both my own observations and the results of most careful questioning of the Danish physicians are definite and convincing on this point. In Labrador, however, a distressing condition prevails. There the natives have been for many years in somewhat close contact with the influence of civilization, and unfortunately have abandoned their primitive methods of existence. Other factors, however, are at work. Wood is abundant, so they cook their meat. The Moravian missions and the Hudson Bay Company, with the best of intentions, take their furs and sell them provisions—dried potatoes, flour, canned goods, cereals and cereal products—and their fare consists largely of these staples. And Labrador, while not truly arctic, offers very little return for the labor of a gardener, so there is no available source of vegetable food. Consequently, scurvy, rickets and combinations of the two are universal. In children one sees severe scurvy, with gums black, teeth dropping out, and hemorrhages of the skin and mucous membranes of decided severity. In adults, the same holds to a lesser degree, and in addition there is the rheumatic pain, stiffness of joints, and fatigue, so well recognized by the old whalers and explorers as their particular scourge. Rickets, in spite of months of almost constant sunlight, seems to be almost universal.

In view of the adequacy of animal tissues in supplying the vitamins, the question as to their source naturally arises. The birds eat fish, the polar bear eats seal, seal eats fish, walrus eats clams (a great delicacy for our crew was clam chowder from the contents of a walrus stomach), and the diet of the clam is open to speculation. The whale eats fish, and the raw skin of the white whale, which we found very palatable, is the antiscorbutic *par excellence*. Of course the caribou, hare, ptarmigan and musk ox eat the moss, lichen, grasses and sparse vegetation of the ground—willow and evergreen. At this point the answer lies with the fish. Of course, he eats some fish, but subsists largely on the marine vegetation, so the answer to the vitamin question apparently is solved by the scriptural saying "All flesh is grass." And to Stefansson must be given great credit for having promulgated the theory that a white man could go far out on the polar sea and there find animal life sufficient in quantity to supply his needs and of a quality to keep him well, for having the courage to stake all on the correctness of his theory, and for having returned as proof of it.

One more observation is of interest: The origin of the Eskimo, racially, is undetermined. Recently he has been considered a branch of the American Indian, as opposed to the time honored belief in his Asiatic origin. At present, the racial aspect of blood grouping is being tried, and the results may be so definite as to settle the question. However, the so-called Mongolian spot is present on practically every Eskimo baby, a stigma said to be confined to certain Asiatic races and absent in the Indian. And, finally, one sees an example of a primitive race, lacking hereditary immunity to disease and overwhelmed at times by epidemics of measles, influenza and the infections which we regard as minor, and in whom approximately one third of those living in southern Greenland in closer contact with outsiders have tuberculosis.

SUMMARY

The Greenland Eskimo, on a carnivorous diet, exhibits no increased tendency to vascular and renal disease. This diet furnishes him with vitamins adequate for protection against scurvy and rickets, while the Labrador Eskimo, whose meat is cooked and whose diet includes many prepared, dried and canned articles, is very subject to both these maladies.

122 South Michigan Avenue.

Clinical Notes, Suggestions and New Instruments

SKIN DISINFECTION, WITH ESPECIAL REFERENCE TO THE USE OF ACRIFLAVINE

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Numerous inquiries regarding details as to methods followed publication of our previous papers[1] and are the reason for this somewhat elementary article. Practically all is in answer to questions that have been asked, some of them many times.

First of all, we wish to correct an error resulting from oversight: "Neutral acriflavine" should read "acriflavine," as acriflavine was used in all the tests reported.

A 5 per cent acriflavine solution is used because we have found this the weakest percentage that can be relied on to kill many resistant, spore-forming bacteria. Fifty per cent alcohol is used as a solvent because acriflavine is only slightly soluble in stronger percentages of alcohol; moreover, histologic experience shows that weak solutions of alcohol penetrate best, and this probably accounts for the well known fact that weaker percentages of alcohol have greater antiseptic value. Acetone is added because it apparently adds somewhat to penetration.

THE SOLUTION

Acriflavine solution is best made freshly in the operating room and cannot be relied on if more than a week old or if any precipitate has formed. It is best kept in a dark-colored bottle away from the light, as light promotes chemical change.

Acriflavine Solution

Quantity of Solution Desired	Weight of Acriflavine in Gm. to Make 5 %	Number of 0.5 Gm. Powders
10 cc.	0.50 Gm.	1
20 cc.	1.00 Gm.	2
30 cc.	1.50 Gm.	3
40 cc.	2.00 Gm.	4
50 cc.	2.50 Gm.	5

A convenient way to make the solution is to have acriflavine put up in 0.5 Gm. powders, and prepare a stock solvent solution which can be used in the necessary quantity, the acriflavine being added to make a 5 per cent strength. To make a liter of stock solution, 100 cc. of acetone and 375 cc. of water are added to 525 cc. of 95 per cent alcohol. This solution contains 50 per cent alcohol and 10 per cent acetone. A sufficient quantity of powdered acriflavine is then added to the desired amount of solvent to make a 5 per cent solution. The accompanying table is convenient to have in the operating room, drug room or wherever the solution is made up.

Any amount of solution may be made by using several 0.5 Gm. powders or the weight of acriflavine corresponding

1. Tinker, M. B., and Sutton, H. B.: Inefficiency of Most of the Commonly Used Skin Antiseptics, J. A. M. A. **87**: 1347 (Oct. 23) 1926; Ann. Surg. **82**: 640 (Oct.) 1925.

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