

Safeguarding health with diet

Many physicians, as well as the general public, tend to believe that specific nutrients can prevent or cure certain diseases. This is an erroneous view, James D. Heffley and Roger J. Williams of the University of Texas believe. Such nutrients, they claim, may prevent or cure diseases, but only because they act as a team with other nutrients.

The Austin biochemists report research results in the October PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES that support their belief. Rats that are fed a lot of the nutrient galactose are known to get cataracts. So Heffley and Williams fed rats a high level of galactose. But some of these rats also received a full complement of other nutrients. The rats that received lots of galactose plus plenty of other nutrients did not get cataracts. But the rats that got lots of galactose but not enough of the other nutrients got cataracts.

The investigators conclude that eating a full complement of nutrients each day can prevent not just cataracts but a host of other diseases. "When humans are fortunate enough to maintain health by consuming wholesome food," they assert, "this is because they consume regularly every one of the some 40 nutrient essentials."

Physical strength and bone density

Older persons especially postmenopausal women, often experience a loss in bone mass—osteoporosis. Such a loss can lead to fractured ribs and hips and lower back pain. Some physicians believe that exercise can help relieve the pain, muscle spasm and perhaps even bone loss of postmenopausal osteoporosis. However research reported in the November ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION suggests that it won't.

Mehrsheed Sinaki and colleagues at the Mayo Clinic measured muscle strength and bone density in older men and women. They found both lost muscle strength with age, especially men. But only women lost bone mineral. And there was little correlation between loss of muscle strength and of bone mineral in any one subject.

So it looks as if muscle strength and bone mineral decrease independently of each other with age, and that women with postmenopausal osteoporosis are not likely to benefit from muscle-strengthening exercises.

A new acne treatment

Most teenagers and one-third of adult women have acne. But treatments have been less than satisfactory. During the past several years dermatologists Albert M. Kligman and his colleagues at the University of Pennsylvania School of Medicine have developed acne treatments that look more promising.

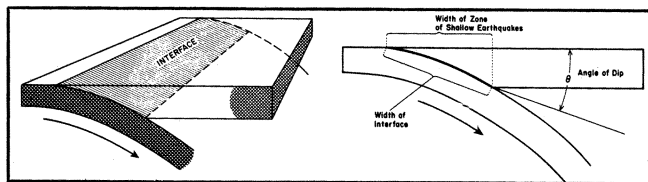
First they found that vitamin A acid cleans out blocked skin pores and leads to acne reduction. Vitamin A acid is now available by prescription under the name of Retin-A. Now they have found that vitamin A acid works even better when used with the antibiotic erythromycin. Once vitamin A acid cleans out blocked pores, erythromycin can then penetrate the pores and reduce acne inflammation. The Philadelphia dermatologists have used the combination treatment for three years on acne patients. Eighty percent of them have experienced substantial clearing of their acne after eight weeks of treatment.

Kligman and his team hope that their new preparation will soon be available commercially.

Great quakes and slab geometry

Most large shallow earthquakes seem to be due to fault motion across the zone of contact between two giant slabs of the earth's lithosphere, one thrusting beneath the other. During an extraordinarily large earthquake, such as the 1957 Aleutian, 1964 Alaskan and 1960 Chilean quakes, ruptures may extend more than 800 kilometers laterally.

Four scientists at the Lamont-Doherty Geological Observatory now conclude that the extent of these ruptures is directly proportional to the downdip width of the zone of contact, or interface, between the two abutting plates. Rupture zones of extraordinary length (greater than 400 kilometers) tend to occur, they have found, only where underthrust and overthrust slabs interact across a broad interface. Where there appears to be a narrow interface between plates, the maximum dimensions of known rupture zones is limited, possibly to 150 kilometers or less.



Detailed study of plate interfaces, say John Kelleher, John Savino, Hugh Rowlett and William McCann in the Nov. 10 JOURNAL OF GEOPHYSICAL RESEARCH, may thus improve estimates of the frequency and maximum dimensions of future earthquakes.

New Southern Ocean current?

Water movement in the subantarctic latitudes of the Pacific is generally regarded to be eastward. Charts show an eastward flow for most all the water east and southeast of New Zealand across to the tip of South America.

Now an analysis of patterns of salinity in the upper 500 meters of Pacific subantarctic waters indicates that the flow at 40 to 45 degrees south latitude may be to the west. Biologist Richard F. McGinnis of Pacific Lutheran University in Tacoma, Wash., reports the evidence in the Nov. 22 SCIENCE.

The existence of what would essentially be a counter-clockwise flow of surface and subsurface oceanic water at that latitude in the Pacific would, he says, account for the distributions of a number of lantern fish species in the Southern Ocean. McGinnis proposes that should the existence of the proposed westward current be confirmed by more rigorous physical analysis, it be named the Deacon Current, in honor of Sir George Deacon, who conducted a classic study of the Southern Ocean. In a report in 1937 Deacon mentioned the possible westward flow that McGinnis now reports, but, says, McGinnis, "his remark has evidently gone unnoticed by subsequent authors."

Deteriorating Antarctic ice sheet

The summer research season in Antarctica is now just beginning. One of the important studies is an effort by University of Maine geologists to learn why the 5,000-foot-thick, 700,000-square-mile West Antarctic Ice Sheet is gradually deteriorating. The surface of the sheet may be dropping, for unknown causes. Perhaps it is being undercut by the sea beneath it. The Maine geologists determined last year that the ice sheet at one time was much larger.