

# medical sciences

## Imino acids and Parkinson's disease

Although imino acids—the initial products in the oxidation of protein amino acids—have been hypothesized for half a century, only now have two Cornell University Medical College scientists proved their existence. The key to Dr. Daniel Wellner and Edmund Hafner's success, reported in the May PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, lay in changing L-forms of amino acids to D-forms, the molecules' mirror images, showing that the intermediary products produced along the way were imino acids.

The discovery may lead to an economic way to produce drugs such as L-dopa, which has drawn attention as a promising treatment for Parkinson's disease. The Cornell team's process for converting amino acids to their opposite form could, for example, provide a practical means of changing the drug DL-dopa, which is the form produced by chemical synthesis, to L-dopa.

## Sight-sound perception in infants

Eye movements directionally appropriate to a sound source have been observed in infants minutes after delivery. Hence two Harvard investigators decided to determine whether human infants coordinate what they hear with what they see. If the capacity is functioning in infants, the researchers reasoned, they ought to notice a discrepancy in spatial information.

Drs. Eric Aronson and Shelley Rosenbloom's results, reported in the June 11 SCIENCE, show that infants as young as 30 days do indeed perceive auditory and visual information within a common space. When their mothers spoke to them, with voices displaced by loudspeakers to other locations, the infants became visibly distressed, especially mouthing or protruding their tongues. Spatial dislocation is thus apparently a violation of the young infant's perceptual world, in which speaker and voice share the same spatial position.

## Metabolic abnormalities in the overweight

A study by Drs. Ronald Kalkhoff and Carlos Ferrou of the Medical College of Wisconsin, reported in the June 3 NEW ENGLAND JOURNAL OF MEDICINE, found insulin and growth-hormone disturbances in obese men, but not in 10 extremely muscular weight lifters who were also overweight by "ideal weight" charts. These and other data from the study suggest that metabolic changes in overweight persons are related more to body fat accumulation than to deviations from ideal body weight or excessive lean tissue mass.

## A gland theory of aging

Various theories of aging have been proposed in recent years—cell reproduction mechanisms go haywire, DNA repair deteriorates, antibody production slacks off. But, like the Fountain of Youth, these theories await confirmation. Now a Russian scientist, Dr. V. M. Dilman of the N. N. Petrov Research Institute of Oncology, Leningrad, puts forth another proposal.

His theory is that the hypothalamus, a neuroendocrine switchboard, starts defaulting in feedback control (receipt of messages from the neuroendocrine systems). It thus fails to properly integrate and communicate the

messages. A faulty hypothalamic regulation then upsets various bodily rhythms and functions, touching off the specific lesions of aging.

A faulty hypothalamus, Dr. Dilman believes, can also explain why the disturbances pertinent to normal aging can be observed in contrasting clinical diseases such as metabolic obesity, diabetes, atherosclerosis and some kinds of cancer, as well as in the menopause.

Dr. Dilman's theory, backed by numerous physiological and biochemical studies by him and other investigators, is reported in the June 12 LANCET.

## Bowel gas—transmittible?

With sex out in the open, intestinal gas remains one of the last taboo human functions. Even medical science has skirted the problem: Only a few bold researchers tried collecting bowel gas at the rectum. Yet none, it seemed, had ventured to flush gas out of the entire intestinal tract.

Now a University of Minnesota Hospital physician, Michael Levitt, has done just that. He found little gas in a normal bowel. But in a bowel which suffered from chronic gas he found hydrogen, nitrogen, carbon dioxide, oxygen and methane. Dr. Levitt believes gas is due to intestinal bacteria activity, since germ-free rats and newborn infants excrete no hydrogen and methane. Dr. Levitt's results are reported in the June 24 NEW ENGLAND JOURNAL OF MEDICINE.

A familial (not an inherited) factor also appears to be involved in methane production, says Dr. Levitt. There is a strong correlation in methane production between siblings, parents and children. When children who had been living together in an institution were assayed by Dr. Levitt, he found many of them to be producers of methane.

There is no ready cure for bowel gas. However, as intestinal hydrogen production depends on the delivery of ingested, nonabsorbable carbohydrates (especially vegetables) to colonic bacteria, Dr. Levitt speculates that if a person is not properly absorbing carbohydrates in his small intestine, cutting down on carbohydrates in the diet might help reduce gas.

## Pot and a quick metabolic trip

A study of the metabolism and disposition of long-term marijuana smokers, reported in the July 2 SCIENCE, confirms that experienced pot smokers metabolize the drug faster than persons who had not used marijuana prior to the test. Half the marijuana disappeared from the blood of chronic smokers after 28 hours; for inexperienced users it took 57 hours for half of it to disappear. Likewise in long-term users, more than 30 percent of the pot was excreted in urine during the first week, in contrast to an average of about 22 percent for nonusers. These results aren't surprising, since repeated consumption of other drugs is also known to speed their breakdown.

Rapid marijuana metabolism might at least partially explain why chronic smokers can get high faster than beginners. One of marijuana's breakdown products, or metabolites, is at least as active as, or more active than, the parent drug.