

**But Chemical Companies Change, Too**

**Hen Research May Help Stop Brittle Bone Condition in People**

Hyperacidity is usually thought of as a condition of the stomach. But bone can get the "blahs" as well.

A high level of acidity in bone has been found to be associated with a high level of bone destruction. This can result in porosity, brittleness, and ultimately a proneness to fractures.

Dr. Werner J. Mueller, professor of Poultry Science at Pennsylvania State University, determined the critical influence of acid through research on chickens. He has been working on the calcium metabolism of the laying hen for some dozen years, under support of the Pennsylvania Agricultural Experiment Station and the National Institutes of Health.

"Contrary to popular belief, bone is not a permanent, static material. It is constantly undergoing destruction and replacement. This process is quite slow in humans but quite rapid in the laying hen, which therefore serves as an excellent model for research."

The new findings have im-

plications for the diagnosis and treatment of human bone diseases, but only as they are confirmed by experimnts on human beings.

The bone of young people is constantly replacing itself and there is a delicate balance between the processes of bone formation and destruction.

But in older people — and

particularly in women — bone destruction often exceeds replacement. This can lead to a condition known as osteoporosis; literally, porous bone. After menopause, women have a proneness to bone fractures and to defects of the spine caused by collapse of certain vertebrae.

That acid plays a large part in

dissolving bone mineral has previously only been shown in test-tube (in vitro) experiments but has not been confirmed in tests with living animals.

"Acid — and we believe it to be carbonic acid — apparently helps leach out or dissolve the bone mineral in laying hens. The bone itself — with the help of an enzyme (carbonic anhydrase) — produces the excess acid as blood passes through it. This 'hyperacidity' can be reduced or prevented by the introduction of a chemical that inhibits this enzyme.

"We have experimental evidence that this inhibitor works in chickens to keep bone destruction down. We can say nothing about its possible effects in human beings until clinical tests are undertaken."

Bone brittleness from porosity is also related to exercise, Mueller points out.

Formerly, hens confined to one a cage developed a form of

osteoporosis. They grew fatigued and ultimately could not walk.

When poultrymen began housing three birds in a cage, the bone disease virtually disappeared, possibly because exercise was stimulated.

Astronauts, even three together, are still prone to the "bird in a cage" syndrome. They can lose considerable amounts of bone mineral during prolonged weightlessness. This is one reason that a regimen of exercise is insisted upon by NASA for every space traveller.

People who must remain in bed for long periods of time are also subject to bone loss and possible fractures.

Mueller emphasizes that it is not known why bone porosity increases in some people and at certain advanced ages. "We are far from suggesting a cure for osteoporosis in man, though we feel that our research on the laying hen is apparently pointing in the right direction."

**U.S. Farm Debt Continues Up**

Farm mortgage debt totaled an estimated \$30.7 billion on January 1, 1972, some \$1.2 billion higher than a year earlier, according to a report recently by the U. S. Department of Agriculture.

The report by USDA's Economic Research Service gives that latest available data on farm mortgage debt by type of lender and geographic region.

Debt rose 4.0 per cent during 1971, compared with 4.0 and 4.7 per cent during 1970 and 1969, respectively. The rate of increase in the debt has been declining since 1964, when it rose 12.4 per cent.

At the start of 1971, Federal land banks held 24 per cent of the total debt, life insurance companies 19 per cent, commercial bank 15 per cent, the Farmers Home Administration 1 per cent, and miscellaneous lenders 41 per cent.

During the last decade, the share held by Federal land banks

and commercial banks has increased, while the percentage of debt held by the Farmers Home Administration and life insurance companies waned.

Interest rates charged by life insurance companies on new farm mortgage loans averaged 8.6 per cent during 1971's first half, compared with 9.3 per cent a year earlier. Rates charged by the 12 Federal land banks averaged 8.01 per cent during the first half of 1971, compared with 8.69 per cent a year earlier. The average rate on life insurance commitments during 1971's third quarter averaged 8.45 per cent.

A copy of "Farm Mortgage Debt", FMD-10, is available free on postcard (please include zipcode) or telephone (388-7255) request from Division of Information, Office of Management Services, U. S. Department of Agriculture, Washington, D. C. 20250.

**Public Sale Register**

(Continued from Page 31)

WED MAR 22 - Public Sale of farm machinery, equipment, hdw, implements and supplies at our new place of business along Route 340, 2 miles East of Intercourse and 4 miles South of New Holland. Sale by Paul Z Martin, Blue Ball, Pa.

THURS MARCH 23- Registered Holstem Dispersal located just off Rte 30 near Leaman Place Sale by Elmer N Hershey Diller and Kreider, Auctioneers

SAT MARCH 25- Public Sale of Farm Implements and Household Goods just east of Guernsey Bar, Lincoln Highway East, 5 miles East of Lancaster Terms by David Witmer Frank L. Steller and Robert E. Martin Auctioneers

SAT MARCH 25- Andrew Berkins Estate Sale located south of The Buck just off Rt 272 Diller and Kreider, Auctioneers

FRI & SAT APRIL 7 & 8- 2 Day Antique Sale for Miriam and Florence Breckbill in the Village of Willow Street, Pa. Diller and Kreider, Auctioneers

SAT APRIL 8- 10 A.M. 4th annual public sale of Rawlinsville Fire Co. Farm Implements, Household Goods and Antiques. Items sold on commission. Food Served. Robert Althouse, Chairman, Holtwood R.D. 2, Phone 284-4530.

**\* FARM ANIMAL EQUIPMENT AUCTION SALE FREE!**

Your sale can be listed in our Sales Register without charge. Just mail details to Lancaster Farming, P. O. Box 266, Lititz, Pa. 17543

**PENNSYLVANIA LANDRACE ASSOCIATION STATE SHOW and SALE**

Saturday, Feb. 26, 1972  
Show: 9:00 A.M.  
Sale 1:00 P.M.  
Location: Pennsylvania Farm Show Building Harrisburg, Pennsylvania

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**WEDNESDAY, FEB. 16, 1972**

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1 load Vermont cows for Gordon Fritz.  
1 load Wisconsin cows for Dale Hostetter.

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