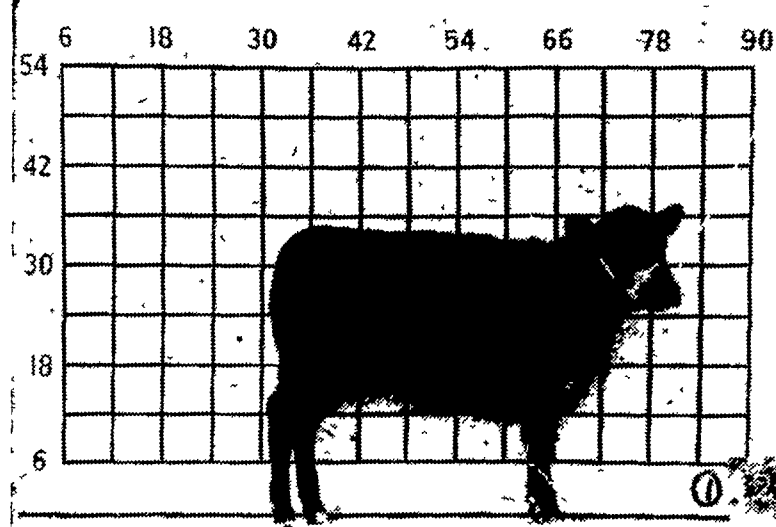


## Young Beef Calves Make Gains Economically, Lose Weight Early

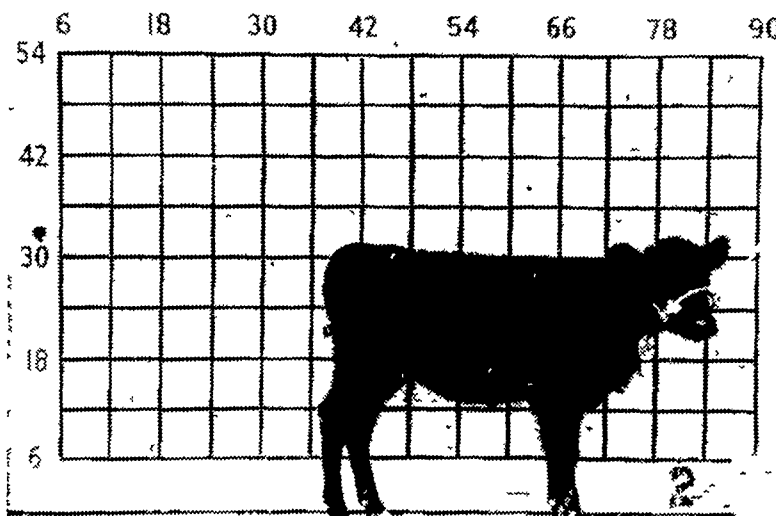
WASHINGTON — (USDA) — Latest results of growth studies on full feed to make economical with identical-twin beef calves gains and high-quality beef, the show that young heifers and U. S. Department of Agricultural steers 3 to 4 months old can be reports. kept temporarily on rations that, These findings by Dr. C. F. barely maintain their weight — Winchester and coworkers of or even result in some weight USDA's Agricultural Research loss — and yet can recover later Service at Beltsville, Md., sup-

### 1. Limited Experimental Ration



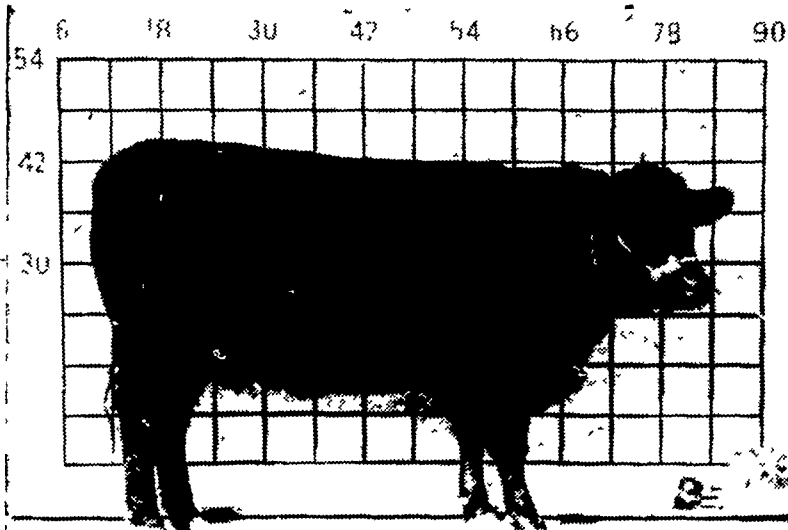
Twins grown studies at Agricultural Research Center, Beltsville, Md; This six-months-old Angus heifer (Calf A) weighs 244 pounds after three months on a limited experimental ration (about 1½ times that required for maintenance). It weighed 174 pounds at the beginning of the tests, thus gained 70 pounds during the three-month limited ration period. Dr. Clarence F. Winchester and his associates at Beltsville conducted this experiment to determine the effect of interrupted growth on future gaining ability of beef calves. This particular calf, one of the controls in the experiment, consumed 305 pounds of TDN during the limited-ration period, or 44 pounds per pound of gain. The calf's diet was adequate in all respects, and it maintained steady, even growth. (USDA Photo).

### 2. Submaintenance Low-Energy Diet



This six-month-old Angus heifer, (Calf B, co-twin of calf A) has been on a submaintenance low-energy diet for three months. It weighs only 150 pounds, having lost 20 pounds from its original weight of 170 pounds since the start of the test. The animal's food allowance for the limited-ration period was only about three-quarters of that required for maintenance, or less than half the amount fed to its co-twin (first photo). It consumed only 110 pounds of TDN during the three-month period of restricted feeding, or about 13 pounds TDN per day. The animal is healthy despite its loss of weight, due to ample protein, carotene, and minerals in the diet. Its loss of weight was due only to the low energy value of its ration for the three-month test period. (USDA Photo).

### 3. 18 Months, Ready for Slaughter



Now 18 months old and fully grown, Calf A is ready for slaughter at 797 pounds. It has been maintained on a liberal ration for the last 12 months and has gained weight evenly and steadily. Its total gain over the 15-month test period was 623 pounds, an average of 1.4 pounds daily. It consumed 3,633 pounds TDN — or 58 pounds per pound of gain — during the experiment. (USDA Photo).

plement earlier results from their twin-calf experiments, which demonstrated that beef steers kept on maintenance rations between the ages of 6 and 12 months could nevertheless produce good beef economically later when sufficient cheap feed was made available. Many animal husbandmen formerly believed that unless calves gained steadily at least half a pound per day their ability to make profitable gains would be permanently impaired.

#### Often Lose Weight

During the winter, many beef cattle in the United States not only stop gaining but frequently lose weight, due to inadequate forage and the poor nutritive quality of some range grasses after prolonged summer exposure to sun and rain.

The Beltsville researchers feel that continuous feeding for rapid growth is desirable for beef cattle whenever it is economically feasible. But their work shows that there need be no loss in growth potential as a result of low calorie intake for 3 to 6 months during the year, so long as the animals' limited forage is supplemented by sufficient protein, minerals, and carotene (provitamin A) to keep them healthy.

In other words, lack of gain or even some loss of weight by young beef cattle on the range in winter or during a drought will not, in itself, make them uneconomical beef producers. Temporary subsistence on maintenance or submaintenance rations, the tests show, need not impair the animals' later feed-use efficiency, and ultimate meat and hide quality, or proportion of lean meat to fat and bone in the carcass.

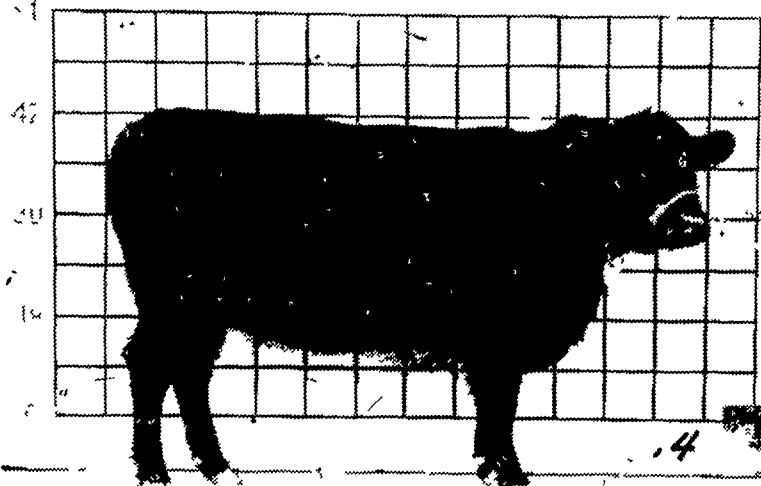
The recent growth studies were made with 10 pairs of identical twin calves. Such twins are rare, occurring probably once in 2,000 or more calvings, but their identical inheritance makes them far more valuable in research than an equal number of less closely related animals. Twins used included both heifers and steers, representing crossbred beef-dairy cattle and "high grade" and purebred beef animals.

#### Limited Feed

One of the twins in each pair received limited feed for a definite period, either between the ages of 3 and 6 months, or between 4 and 8 months of age. Three of these animals were given submaintenance rations — about 75 per cent of the calories necessary to maintain weight. (Their average daily weight loss during the period of reduced energy intake was 0.2 pound.) Another 3 animals were fed just enough to maintain weight, and 4 others were given allowances ranging from maintenance to a fairly liberal ration.

At the end of the 3- or 4-month period of restricted feeding, these 10 animals were fed

### 4. 18 Months, Only 708 Pounds



Now weighing 708 pounds at 18 months of age, Calf B made a rapid recovery from its early weight loss during 12 months on liberal feed. It has gained 558 pounds, or 15 pounds per day over its weight of 150 pounds at six months of age. After this photo was taken, the animal was fed for an additional three months to bring it to a slaughter weight of 833 pounds. Despite the additional three-months feeding, the amount of feed (TDN) required by this calf was 3,962 pounds — or 60 pounds TDN per pound of gain. This is almost the same as the TDN per pound of gain required by its co-twin, Calf A, which was fed well above the maintenance level throughout the experiment. Resumption of normal growth by Calf B indicated that, as long as all nutritional needs other than energy requirements for growth are met, a period of no weight gain or even some loss of weight need not affect a calf's ability to make later gains economically or to produce good quality beef. (USDA Photo).

as much as they would eat until they reached slaughter grades of low choice to prime (average weight about 1,000 pounds) at about 2 years of age. Their 10 co-twins were fed liberally throughout the experiment and were slaughtered at the same average weight.

The low-calorie ration fed consisted basically of alfalfa hay and linseed oil meal. Animals not on submaintenance or maintenance rations also received cracked corn. All the animals were fed adequate protein, provitamin A, phosphorus, and salt.

Despite the interruption in growth of animals on maintenance or submaintenance rations, all later grew rapidly on full

feed. In every case, growth was resumed following the interruption at a rate that was normal or better for the size of the animal. The two heifers and one steer on submaintenance rations gained almost 7 per cent faster on full feed (average, 177 lbs per day) than their co-twins, used as controls.

The average amount of feed (TDN) per lb of grain required during the experiment by the 10 animals on temporarily restricted rations was 61 lbs, almost exactly the same as that required by the 10 controls (60 lbs TDN per lb of gain). In 4 out of 10 cases, however, the cattle given limited feed took several weeks longer to reach slaughter weight.

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