

since been added to, but they have never been controverted because Beaumont's book is largely a report of factual observations.

His studies were the subject of a *Classic of Science* in the *SCIENCE NEWS LETTER* of July 4, 1931. (Volume XX, Page 10).

*Science News Letter, September 30, 1933*

## ENTOMOLOGY

## Insects Use Many Devices To Live Through Winter

**L**IKE BEARS, ground-hogs and other warm-blooded animals, many species of insects sleep through the winter. But their hibernation habits assume many strange patterns, unlike those of larger and more familiar creatures. Some of these insect hibernation habits were described in a talk on "How Animals Spend the Winter," given by Austin H. Clark of the U. S. National Museum, under the auspices of Science Service.

Many insects, like some butterflies, wasps, bees and flies, live through the winter as adults, hidden away in some snug retreat, said Mr. Clark. A few warm days in winter often bring them out, and they fly around until the returning cold puts them to sleep again. More familiar, of course, are the cocoons containing the chrysalids of moths, which school children bring in for their first nature study lessons.

But not all cocoons contain chrysalids, Mr. Clark continued. Some butterfly species spend the winter as full-grown caterpillars, hidden away in loose cocoons. In the first warm days of spring these caterpillars change into the chrysalids from which the adults finally emerge. Still other butterflies live through the winter as caterpillars partly grown which in the spring complete their growth and then become adults.

Most of those butterflies called fritillaries, in color golden brown with silver spots on the under surface of the hinder wings, lay their eggs in summer. The little caterpillars that issue from these eggs lie quietly on the ground and will not eat until the following spring. For six or even seven months, through the heat of the late summer and the cold of winter, they are completely passive, waiting for the proper time to begin to eat. A few butterflies and many different moths spend the winter in the eggs which are laid in summer but do not hatch till spring.

*Science News Letter, September 30, 1933*

## DEMOGRAPHY

# Recovery Program Aims at Human Resource Conservation

## Migration From Farms to Villages, Rather Than to Cities, Seen as Solution to Population Shift Problem

"**C**ONSERVATION of our natural resources" was a slogan when the other Roosevelt was president, and for a generation it has had a great hold upon our imaginations.

The relation of the natural to the human resources of the nation is one of the most vital problems of today. In addition to the emergency matter of the NRA and its re-employment campaign, there is the long-time important problem of population in relation to agriculture and industry.

Few people seem to realize the significance of the declining birthrate. Dr. O. E. Baker is one of those among the economists who has studied this problem, and his conclusions, arrived at from his vantage point as the Department of Agriculture's senior agricultural economist, are significant. The need of conserving human resources is even more urgent than that of conserving the natural resources.

### Not Enough Children

"The conservation of natural resources," Dr. Baker says, "has been recognized in all plans for national development. But no plans have recognized, as an objective in a national policy, the even more urgent need of conserving the human resources. Not enough children are being born in the nation now to maintain permanently its present population."

Fundamental in the agricultural situation is the fact that the land resources of the United States exceed those of all Europe, excluding the U. S. S. R., and are of a similar magnitude to those of China and India; whereas the population of the United States is about 125,000,000 and is unlikely to exceed 150,000,000 as compared with 350,000,000 in Europe, excluding the U. S. S. R., and probably 800,000,000 in China and India. Since exports of foodstuffs from the United States are decreasing, while agricultural technique continues to advance, it is clear that either agricultural production must be restricted or the

diet of the American people must trend in the direction of those foods that require relatively large areas of land for their production. Fortunately, these are the same foods that many people greatly need.

The uncertainty in the situation relates to the persistence of urban unemployment, with its retarding effect, not only upon the use of the more expensive foods, but also upon migration from the farms to the cities.

### Unemployed Older

Prior to the depression, agricultural recession raised serious problems in many "submarginal" areas. The net migration from farms, largely in such areas, to cities and villages exceeded 6,000,000 during the decade 1920-1929. These problems arising from agricultural recession will persist in some areas, but in other areas urban unemployment is now inducing equally urgent problems of agricultural settlement. All the unemployed are growing older, and many are becoming unemployable. There were 34 per cent. more people in the United States over 65 years of age in 1930 than in 1920, and the increase in number will be even greater by 1940. Local studies of the "back to the land" movement reveal a surprisingly large number of people over 50 years old.

Moreover, so long as the migration of young people from the farms to the cities and villages is retarded by inability to obtain employment, each year will add many thousands to the farm population. In 1932 the increase in farm population was, apparently, 1,000,000, the net movement from cities to farms exceeding 500,000, while the excess of births over deaths was nearly as great. If migration from farms is balanced by migration to farms during the decade 1930-1940, there will be about 2,250,000 more males over 20 years of age on farms in 1940 than in 1930, and nearly 1,200,000 of these will be operating farms, if the 1930