ing their influence in a manner quite independent of the customs and traditions of either parent, just as they seem to be doing.

Whether they will come to represent a distinct yet intermediate Rocky Mountain species, with *cafer* and *auratus* occupying a diminished habitat south-west and north-east of their enlarged domains, or whether, continuing southward, they will affect *cafer* through its entire range until that species, as such, disappears, replaced by a form combining the type characters of *cafer* with the red nuchal crescent of *auratus*, is a mystery the present cannot solve and the future will be loth to reveal.

CONCERNING OUR WASTE GROUND.

BY J. T. ROTHROCK, WEST CHESTER, PA.

FEW persons, except those who have been west of the Mississippi, have any real conception of the vast areas there which might well come under the head of "Waste Ground." To eastern eyes the miles of desert seem, from any productive standpoint, absolutely hopeless. A little examination, however, may reveal the fact that such a judgment is both hasty and erroneous.

It is quite true that these regions are dry and, at present, deserts whose vegetable productions are mainly cacti, sage-brush, and various species of Chenopodiaceæ. It is so true, though, that the elements of plant life are in the soil, that whenever a spring or a flowing stream appears, a more or less dense vegetable growth is seen also. Hence the western aphorism that the value of a man's farm depends not on its size, but on the quantity of water he can put on it during the growing season.

This preliminary statement leads to a consideration of the subject from two points of view. 1. Are the present natural productions of no value, immediate or prospective? 2. Are we utilizing the rainfall of those desert areas to the greatest advantage? It may be said that this second question starts a vast train of secondary considerations, quite beyond the limits of this paper.

As to the first question, it is a fact that thus far mankind has depended very largely on the more fertile ground for support. This is especially true of our own country. It was, of course, in the natural trend of events that a choice between promising and unpromising areas must of necessity lead to the selection of the promising first — the fertile before the barren, that which could be irrigated before that which could not be. Increasing population has left little choice, and the first probiem is, Of what value, if any, are these unattractive forms of desert plant-life? We may eliminate at once, without consideration, the sage-brush and the cacti, because they are of no great promise. The case is otherwise with the Chenopodiaceæ. This order of plants promises much. Its general character, to begin with, indicates latent possibilities. For example, it furnishes the beet, mangel wurzel, garden orach, and several species, also, of the mealy seeds are largely used by our American Indians as food. In South America, quinoa is an established article of food, and comes likewise from this order. Add to the above the fact that *Eurotia lanata*, another representative of the order, is a well-known and highly valued forage plant in some of the drier and more alkaline regions of our West, and the case would seem pretty clear that we have to do with an order which is well worthy of extended observation and experiment.

Here then are three points for consideration: (*a*) What plants of the order can be used as food, and what portions of them? (*b*) What does each promise in the way of improvement under *long-continued*, judicious cultivation? (*c*) Is there any way by which such seeds (of this order) as contain active properties can be treated so as to render them fit for food?

The fact at once suggests itself that here is a field of research, which (however promising) is mainly beyond reach of the individual observer. Time is a prime factor in the most important of the three questions. To test the capacity of any species fully for improvement would require *not less than a quarter of a century*, and, more than likely, a much longer period. It is fairly one of the problems which should be referred to a long-lived government, either for direct consideration by its own corps of experimenters, or, perhaps better still, by the agricultural colleges of each State in which such plants grow abundantly.

Among the Labiatæ (or mint family) the Chia (seeds of *Salvia Columbariæ*) appears. Its use among the aborigines dates back beyond our knowledge. We do know, however, that it was among the so-called "Aztec" races of Mexico an article of food, that it was accepted as tribute by the conquerors from the conquered, and that it still holds a place on the diet-list of the California Indians. Such, then, are some of the indications as to possible sources of food-supply which even the barren-ground portions of our country may be made to yield to an increased and hungry future population. Is it not, also, possible that desert plants, having useful properties, might be introduced, from other countries, into our own drier regions, with advantage to us?

The second part of the barren-ground problem — to obtain the largest utility from our rainfall — is already complicated by its association with existing State lines. Take, for example, the condition of affairs in Kansas, Nebraska, and Utah. Much of the water received by those States and the territory comes from the mountain slopes of Colorado, and how much of this water they shall receive depends also upon Colorado. Yet Colorado was the last of all to be settled. The continued prosperity of three earlier-settled States is contingent upon the wants, the caprice, or the cupidity of one later settled State. Clearly, there is something wrong in a political economy which makes such a condition possible. There is no probability that lapse of years will simplify the problem, and at once the question suggests itself as to whether drainage-lines should not promptly be regarded and acted upon as important factors in determining State boundaries. Here one comes in contact with political organization. All the States concerned (by their commissioners at least) must be in accord before any change of boundary can be made. And one can readily see the almost interminable line of contests, between statesmanship on the one hand and politics on the other, which such change will open up.

There is, however, another aspect from which this question can be viewed. Thus water-storage may, to a certain extent, remove the pressure of an inadequate water-supply. There seem to be certain districts, for example, that of the White Mountains of Arizona, where the rainfall is within a very few inches of enough to ensure crops. That this deficiency could be supplied during the growing season from storage basins seems more than probable. The exact method of constructing such basins so as to ensure the safety of the residents on the lower grounds is more doubtful than the benefits possible if the water were once hoarded.

NOTES AND NEWS.

PROFESSOR GEO. R. VINE of Sheffield, England, has recently distributed a report of a committee of the British Association for the Advancement of Science, appointed to investigate Cretaceous Polyzoa. In this conclusion to a series of investigations extending over a number of years, we have discussions of the species occurring in various sections, together with a catalogue of the Polyzoa found in the Chatham Chalk. In this, references are given to the original place of description of the genera and species, the classification of D'Orbigny being followed to a large extent. There is finally a catalogue of the species of British Cretaceous Polyzoa, numbering 283 species, with references to place of description and the geological or zonal distribution. Students of Polyzoa must be grateful to Professor Vine for the great amount of work he has done at various times upon this difficult group. In a second paper, reprinted from the Proceedings of the Yorkshire Geological and Polytechnic Society, Professor Vine describes and illustrates some new species, and remarks upon many others from Cretaceous horizons.

— "Mother and Child" is a compendium of modern scientific knowledge of the relationship between the parent and her family, which J. B. Lippincott Company will publish at an early day. It is prepared by Drs. E. P. Davis and John M. Keating, and contains information which is of importance to women's well-being, as well as in regard to the varied diseases of children. It is specially adapted to domestic use, but will also be valuable for trained nurses and the medical profession.