

strange yet familiar case of Romeo seeking the Juliet who is forbidden to him. How this desire to see, to hear, to touch the loved one dominates his life, waking and sleeping! How it fevers his blood; wears him to a shadow; keeps him running to and from scheming, trying, hoping, desponding, exulting, despairing, and always desiring. The desire governs all his thinking and acting; the most rooted habits of mental associations are as nothing in the course of this torrent of purposive activity, all directed to Nature's most imperative goal.

"Can we accept any account, any description or explanation of human life, which leaves out of the picture this all-important aspect that we call impulse, desire, striving toward a goal?"

It may be, Prof. McDougall suggested, that eventually men of science will agree that there are in the universe two ultimately different kinds of processes, the mechanistic and the purposive, the strictly determined and the creative, the physical and the mental. Or it may be that, eventually, one of these may be shown to be merely an appearance of the other, an appearance due to the present limitations of our understanding.

He predicted, however, that if the two types of process are ever resolved into one, the purposive tupe that we regard as the expression of the Mind will be found to be more real than the other.

SEEK TO MAKE PLANTS TURN MORE SUNSHINE TO FOOD

Possibilities of increasing the food supply of the world through study of agricultural factors as yet little understood are enormous, Sir John Russell, F.R.S., said in his address as president of the agriculture section of the British Association for the Advancement of Science.

No attempt has been made in the field, Sir John said, to control two of the most important of these factors influencing the growth of plants, light and temperature, although both now are subjects of experiment. He spole of these possible fields of experimentation which hold out promises of increasing yield and quality manyfold:-

1. Increase of plants in efficiency as transformers of the sun's energy. At present plants transform only about one per cent. of this energy. The most efficient plant lags far behind the worst motor car. If some means of utilizing two per cent. the amount of energy transformed by a steam engine 100 years ago, would be obtained it would make the average wheat crop in England 400 bushels per acre, instead of the 200 obtained now. Sir John said that increases in plant growth amounting to from 20 to 25 per cent. have been obtained in England by the influence of high tension electrical discharge which presumably acts by increasing in some way the efficiency of the plant as an energy transformer. The value of experiments along this line, he said, lies in the great increase in yield obtainable by a small increase in efficiency.

2. Adaptation of plants to both soil and climate. A soil moderately fertile under one set of climatic conditions may be absolutely unproductive in another. A clayish soil which in England is almost barren proves excellent grain and cotton land in the Sudan. Clay, under wet conditions becomes a serious drawback. It might be possible, Sir John said, to find some mathematical relationship between

rainfall and the degree of objectionableness in clay. The fertility of soil in any given locality is dependent to a considerable extent on the fact that it fits in with the climatic conditions in supplying the needs of the plant. To make the complexity worse the soil itself is not constant but is always ^{varying} within certain limits.

3. Temporary changes in plants brought about by changed conditions, wholly independent of the plant breeder. It is a commonplace among farmers that certain soil conditions influence not only the yield but the quality of crops. At Rothamsted, in England, the sugar content of mangold roots, an important factor in determining feeding value, was increased by increasing the supply of potassium to the crop. Grass has been increased in feeding value, quite apart from any increase in quantity, when treated with phosphates. At Rothamsted a high class cook can distinguish between the quality of potatoes fertilized with potassium sulphate and those fertilized with potassium chloride. Grain however, has proved more difficult to alter by changes in environmental conditions although the protein in wheat has been increased by increased soil moisture.

The Institute of Brewing in England now is making a full investigation of barley, still the basis for the national beverage. It has been found that increased moisture increases the amount of nitrogen in the grain and so also does an increased nitrogen supply, although to a much less extent. Other substances, such as both potassium and phosphatic fertilizers may decrease the percentage of nitrogen, although they do not always do so. The laws regulating these changes still are unknown, Sir John said.

4. Control of pests or parasitic diseases, which in England ruin at least ten per cent. of the total value of the crops each year. These may be controlled, Sir John said, through study of the three controlling factors. Pests and parasites do harm only when they are present in an attacking state; when the plant is in a sufficiently receptive state, and when conditions are favorable to the development of the pest. Complete control of any of these three conditions would end all plant diseases, he said. If plants could be pushed through the receptive stages before the pest was ready they would escape attack. In the Sudan cotton thrips have been placed in a measure under control by giving the plants protection against the drying north wind and so maintaining a more humid atmosphere - a condition under which the plant thrives better than the pest and is past the stage of attack before the latter is ready. The best remedy, he said, still lies with the plant breeder, by producing a variety immune to all diseases.

URGES ADOPTION OF SIMPLER CALENDAR

Just because a whimsical Roman emperor decided he wanted an awkward, unscientific calendar why must all future generations follow suit?

This question was raised by Charles F. Marvin, chief of the United States Weather Bureau, before the physics section of the British Association for the Advancement of Science.

Our complex and awkward calendar, Mr. Marvin said, with months of unequal lengths made up of four weeks plus 0, 1, 2, or 3 days absolutely prohibits orderly and rational summaries of statistical data in suitable units of conveniently increasing time.