

4. Usually, water containing 50 parts of total solids in 100,000 parts, can be utilized for irrigating any crop and may be classed as good water.

5 More than 150 parts of total solids in 100,000 parts of water is considered bad for crops like betel which stand long on the land and which require large amounts of irrigation water. Some crops like cholam can stand much larger amounts of these salts. Different crops can tolerate different amounts of salts.

6. Sugar-cane can come up well with waters containing large amounts of salts in a well manured and well drained soil, but the quality of juice will be inferior and the quantity of sugar obtained will be very much less.

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NOTES

Presiding at the 32nd Annual Meeting of the Society of Chemical Industry, held at Liverpool in July 1913, Professor Marston Bogert of the United States delivered an interesting address on "the Chemical Industries and the Universities." Defining education as "the process of fitting the individual to take his place and do his best in the life of his age and nation," he said that the properly trained chemical graduate is, in the vast majority of cases, a far more valuable man to a chemical concern than the employee who knows only mechanical details and has not had the benefit of any real scientific education. At first the latter may appear to greater advantage because of his familiarities with the processes involved, but he will be very speedily outstripped by the University man, given at all a similar initial endowment. One is likely to be a rule-of-thumb man whose actions are wholly determined by experience and who is completely lost when anything new or unexpected happens. The other is the more resourceful and will seek the underlying cause of the difficulty and independently work out a remedy. Each has his place in the industrial life, but the scientifically trained man will rise to higher levels of usefulness. Manual skill is quite essential for a University man."

The above remarks apply as well to the agricultural industry where the student of an agricultural college is often found to be at a disadvantage when compared with a practical farmer in the beginning of his career, but his superior scientific education is sure to stand him in good stead and make him more useful in the long run, so long as he does not neglect, but, on the other hand, improves in manual or mechanical skill which he acquired in his College days.

Dr. E. K. Muspratt (President, 1885-86), in proposing a vote of thanks to Professor Bogert for his presidential address, said that "one great advantage of that society was that it was bringing together men engaged in pure science and others engaged in manufacture. He was glad their President had brought up the subject of Universities and their relation to chemical industries. Fifty years ago, Germany had very few industries, the United States had only two or three Universities and there, as in our own Universities, science was hardly taught at all. When he went to the United States in April 1876, he went to visit a fellow student of his, Professor Brush of Yale, who, with Professor Johnson, was engaged at the scientific school which had just been attached to the university. Although they had taught science at Yale, there was no strictly scientific school until that year, 1876. In England they were just as much behind as the United States. Our own universities hardly taught science at all. Very little original work was done, because there were no opportunities to do it. The Liverpool University College was founded in 1879-80 and was opened first in 1882. One of the first buildings they erected was, he was glad to say a, chemical laboratory. At that time they had only one Professor of Chemistry. Now they had four and in a few years, he had no doubt, they would have more, because development meant more and more specialising. He thought they had been able to train a certain number of chemists who would formerly have been imported from Germany, Germany was pre-eminent in the thorough teaching of chemical science. His old master, Liebig, made science

popular by his wonderful lessons on Chemistry, but he also drew attention to the chemist. For his first 25 years, he devoted his attention to the purely scientific, and it was a great work ; later he laid himself out to the application of science to physiology and agriculture, and the enormous advances which had been made in agriculture was due to the work in the laboratories of Baron Liebig. England and Scotland far surpassed Germany in agriculture, but we unfortunately did not adopt agricultural colleges where agriculture was taught as a science. After Liebig moved in Germany, agricultural colleges were founded in every country, and since then, agriculture had made enormous strides. So the great advance in Germany, in agriculture as in other sciences, was really owing to the Universities." (J. S. C. I.)

We in India need not, after all, feel quite despondent, because England and the United States have had only 30 years' start of us. What India is more in need of is faith, implicit faith in science and scientific methods. The late Mr. V. Krishnaswami Aiyar than whom there was no greater patriot of India once said that the best scientists should be got into the country, on whatever terms they might ask, and each scientist might be considered to have done his work for the money if, at the end of 10 years, he had trained 10 Indians in superior scientific research. The new curricula adopted in Indian Universities tend towards laying a surer and better scientific foundation in Indian youth, and the work of the Indian agricultural colleges newly started is sure to add to the accumulation of scientific knowledge in the country and we may safely state, judging from the experiences of other countries, that these agricultural colleges will greatly add to the material benefit of India.

The man who wants to be a farmer :—

It is strange, but it is true nevertheless, that the greatest advancement in the line of scientific farming is being made, not by the man who is a farmer by birth and inheritance, but by the

man who *wants to be a farmer*—the man who gets his knowledge first and then proceeds to apply it. There is a great movement on hand for better farm methods, but the initiative is coming from the cities and towns and from the centres of agricultural education. Practical knowledge is a mighty thing, but when it is not backed by scientific information it is of little worth. It is little better than theoretical knowledge without practical experience. The best farmer in the world is the one who, having the practical experience, adds the scientific knowledge that tells him why he does things. He is then master of the situation. The next best farmer is the man who wants to be a farmer and begins with a foundation of scientific knowledge, then adds experience. His experience may cost him something, but it will not cost him as much as the experiments of the hit-and-miss practical farmer will cost him.— (*Campbell's Scientific Farmer*).

At Mukkamala, a dry land village near Narasapur, the practice obtains of mixing sunnhemp in gingelly, the former being ploughed in after the gingelly is harvested. This is said to mitigate the exhaustive effects of gingelly. The Assistant Director of Agriculture, Northern Division, reports that he has not seen such healthy and bumper crops of gingelly and sunnhemp as at this village.

With a view to meet the demand of cultivators and of the Department, for daincha seed for green manuring purposes, several bits of ryots, lands have been selected by the Deputy Director of Agriculture, Southern Division covering an area of over 10 acres, most of which is near Watrap, Ramnad District.

* Chillakampa, is a thorny plant growing near Mangalagiri in the Guntur District. It forms a good live fence, in 3 years, against all kinds of trespass and is said to be easily propagated by cuttings,
