Biology: Its importance in Modern Education

One of the most important and remarkable developments of modern times has been in the study of Biology. Educated men have only very recently recognized the fact that this science is in a large sense the foundation of nearly all forms of human progress.

In the past few years vast advances have been made in all the sciences, and in the realm of the Physical Sciences particularly, investigations and discoveries and their practical application to production have resulted in an immense increase of material wealth. This increase, however, is swallowed up by the drain due to the destructive activities of animals and plants which as parasites, carriers of disease germs, and destroyers of crops, are slowly gaining a dominance in the world. Their activities are a menace which unless checked may lead ultimately to the degeneration of the human race. We are awakening to the fact that human efforts in checking this colossal drain on the wealth of nations can only be successful if undertaken on a national basis. A nation’s health and efficiency is the health and efficiency of its citizens, and unless this is of a high standard national wealth and prosperity will suffer.

The first step in this great campaign is the education of the general public in the fundamental principles governing life – the laws of health, the functions of the body in health and disease, the chief types of animals and plants beneficial or dangerous to human health, the role of animals and plants in the spread of disease and the dangers of uncontrolled human reproduction, especially in the undesirable classes of humanity. Mass ignorance in these respects has undermined the health of nations, incapacitated millions and endangered the health of the fit.

The two main channels for the drain of the world’s wealth are through human disease and animal and plant pests, and the progress made hitherto by experts has been almost entirely in the field of cure rather than prevention.

In the problem of disease we have left the task to the medical fraternity. It is impossible for medical men and other scientists alone, with all their knowledge, experience and willingness to serve, to combat disease brought about through ignorance. For every individual cured through the corporate knowledge of doctors and other scientists, there are tens of others who contract disease through that arch enemy, ignorance. The need for more doctors and more money to heal the ever-increasing numbers of suffering humanity will obtain scant relief as long as we fail to change our methods of approaching the problem. A nation’s knowledge of the means of preventing disease is probably the biggest and most important step in man’s warfare with disease.

In the problem of animal and plant pests similar conditions prevail. Crores of rupees are annually lost in India through the devastating depredations of insects alone. Add to this the wealth lost by other animal and plant pests and the figure far outstrips the wealth that can be accumulated through the combined achievements of all modern science.

The world can never be adequately grateful to the workers in the physical sciences whose achievements and discoveries have contributed much to the progress and prosperity of the world. Admirable as the progress and effect of these achievements may be, the world has not yet found an effective check to the drain of human life and wealth. Indeed we owe it as a tribute to these silent workers to specialize and concentrate on a study of the comparatively neglected Biological Sciences; a knowledge of which is absolutely essential for conserving the health and prosperity that the Physical Sciences have won for us.

A review of coalbed methane exploration and exploitation

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Methane is an unpleasant explosive contaminant of coal, better known for killing miners than benefiting society. But recent technology developed in the US has allowed the gas to be tapped and sold in commercial quantities. The amount of methane held in coal seam depends on the age, moisture content and depth of the coal.

Coal is a carbon-rich material that has been formed by the chemical and thermal alteration of organic debris. During this process called coalification, a series of by-products are generated, including water and methane. With the progress of coal in rank from peat to anthracite, about 140 m³ of methane is generated per ton of coal. The amount of methane