

## First Annual Meeting N.Z.M.S.

### Inaugural Address

J.O.C. Neill, President

It is entirely fitting that we microbiologists should have a society of our own. Our science deals with the world of minute beings on whose activities depends all other life on this planet. Without them there could be no soil and without soil neither plants nor animals. All science is but an attempt to understand the environment in which we humans find ourselves and, with that understanding, to mould it to human needs. In essence science is an evolutionary adaptation devised by the species *Homo sapiens* to ensure survival.

Our branch of science, young as it is, has grown already to match its parents, botany and zoology, and is growing faster each year. More and more men and women are attracted to its service. Inevitably it has been concerned mainly with the micro-organisms that cause disease in plants and animals since these affect directly man and his food. But comparatively very few are pathogens. It is in the elucidation of the part played in the economy of nature by the rest that our highest task lies in the future. Occasionally, and almost accidentally, a ray of light appears, such as the discovery of antibiotics, but the fundamental relationships of the swarming population of the soil, and their role in plant nutrition, remain almost unknown.

Until now we microbiologists have been a scattered folk, each in his own isolated laboratory with little contact except through the literature with his fellows. Now, with the inauguration of this society, we have a meeting place and a collective authority to speak for us all. It is well.

Consider what we know of life on this planet. From the infinite complexity of its forms today a converging pattern of evolution stretches back to the period when its traces first appear in the fossil records. It is a fair inference that ante-dating that period, the evolutionary lines continued to converge until they met at a point - the first body containing life. For, as far as our knowledge reaches, life must have a body or dwelling place. Perhaps no larger than a single molecule. Consider again what must have been the inherent capabilities of that body. First it must have had a will. A will or desire to survive and a will to multiply. Secondly, as a necessary corollary of that will, it must have had intelligence, the ability to wrest from its non-living environment the materials and power to build and maintain that body. Thirdly it must have had the faculty of memory. Having once achieved the building of a body, and of its reproduction, it must have retained the knowledge of how to do it again. Given these three attributes of living bodies - will to survive and multiply, intelligence to cope with environment, and inherent ability to retain and utilise experience,- the course of evolution becomes comprehensible in a way no theory of chance obedience to physical laws can ever be.

In the light of this conception, consider an organism of the comparatively simple kind in which we microbiologists deal, say the blue mould fungus of the Stilton cheese. Now if we take some thousands of spores and subject them to some unfavourable influence, say a gradually rising temperature, we find that, though at some point the great majority are inhibited from germinating, there are always a few that can do so well beyond that point. And the next generation bred from these is apt to have a higher proportion of resistant individuals. Moreover, if we grow in unit

culture any number of spores from a single branch, each on careful examination will prove to differ in some way from the rest. All, of course, can be recognized as belonging to the species *Penicillium Roquefort*, but each is an individual. Our spore is simply a detached portion of its parent, a fragment of its innate life held in a parcel of body substance, yet, once detached, it becomes what we call an individual, a body concerned with its own survival, capable of meeting new circumstances by new methods. It is this innate capacity for adaptation that explains why pathogens become progressively resistant to therapeutants, - a very pressing problem today. If we provide only unaccustomed food, the fungus will fare badly or not at all, but, if the new food is introduced gradually, it will generally in succeeding generations adapt itself to the change. *P. roqueforti* does not usually grow on oranges, nor *P. italicum* on cheese, but I have no doubt that, if someone took the trouble to educate them, each would do so. That is to say, a living thing is not a blind automaton, slave to its environment, but a sentient being capable of compelling environment to minister to its needs.

I like to think that we became microbiologists because of the first vision of the marvellous living world hid from normal sight. From that moment we fell in love with the microscope - literally love at first sight. For us that love and wonder even survived the treadmill of the schools. We sought a job dedicated to its service. But a job is a means of earning a living, and inevitably yields little time or encouragement for such things as love and wonder. But, however overlain, it is still there, ready to spring to life when some chance vision appears. To work with these most primitive of living beings is to feel that here, if anywhere, are to be found the clues to new knowledge of the basal problems of mankind. Above all, if we can keep unclouded minds, we can preserve that reverence for life itself without which our work becomes joyless and sterile. With it we become privileged explorers in the greatest unknown territory of man's understanding. If in this spirit our new society is founded and preserved, then it should play a worthy part in extending human knowledge - at the least, it can hardly fail to be a help and inspiration to its members.