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PRESIDENTIAL ADDRESS

By T. DURRANT.

The population of the World is increasing at a terrifying rate. The figures involved are so astronomical that they mean little to most of us. In round terms the annual increase equals 12 times the population of New Zealand and 25 million more mouths to be filled each year. Perhaps 2/5ths of the total world population attains a reasonable standard of living and nourishment—the vast majority (almost all of them people of other than European race) live at starvation level or below. It is this basic fact which is, almost certainly, the root cause of the present state of fear and conflict which is characteristic of the world international system to-day; even though we customarily think of it in ideological, political or racial terms. The problem is not merely one of vast increase in total food production but substantially also one of distribution, since we have the paradox of overproduction in some places and governments, like that in the United States, hard put to it to find an outlet for surplus food which has accumulated as a result of internal price support policies. The recently announced "Soil bank" policy in U.S.A., which will take large areas of land out of food production, may be good short term domestic policy, but for the hungry world it is a tragedy.

Dr. L. R. Wallace, in his very learned Presidential Address to this Society in 1953 said: "Those taking the broader, international and humanitarian standpoint look with horror at the unprecedented rate at which the world's population is at present increasing and describe the need for increased food production as one of desperate urgency if catastrophe, upon a scale never before experienced is to be averted."

New Zealand's problem is related to the larger one. It has a rapidly increasing population; it depends almost entirely on primary production for its livelihood; its standard of living is directly related to the volume and value of its exports of farm produce and its future is irrevocably bound up with the soil and the efforts of those who work upon it. I propose briefly to review the extent of this special problem; to examine the resources available to meet it; to look at the existing organisation and to explore some possible new approaches to its solution.

So much has been said in recent times about the growth of population in New Zealand, that it is unnecessary to do more than quote the latest statistical information contained in the current (1955) edition of the New Zealand Official Year Book, which is as follows:—

Population, including Maoris but excluding Island Territories	2,105,767	having increased by approximately 46,000 in the preceding 12 months.
Estimated Future Population	1975	3,047,000
		1991	4,046,000
		2000	4,721,000

In the 1945-51 intercensal period the average annual increase in New Zealand is 2.37 per cent. Corrected for movements of Service personnel in that period the increase approximates at 2 per cent.

While these figures must, of necessity, be approximations there is no reason to suppose that they will not be substantially realised and may be exceeded. The cold, harsh and inescapable conclusion to be

deduced from these figures, is that in 35 years' time New Zealand must have doubled the volume and value of its primary production and exports. The Director-General of Agriculture, in his 1955 Annual Report, says: "We have the land, the stock and the knowledge to produce the goods," but does not appear to have used population figures beyond the three million mark and does not discuss the relationship between available land and population increase. He gives a series of tables of detailed production increases by provinces and ports but gives no details of how these increases are likely to be realised.

There is a danger of using three or four millions, or indeed, any specific figure, as if it were a fixed population target instead of merely a milestone on the road of population increase. Examination of the available figures would indicate that the Director-General is probably right that a sufficiently intensified effort can produce the goods. The question is, however, for how long? Well within the lifetime of the young farmer of to-day, the indications are that the problem will have outgrown anything that mere intensified effort can produce.

There must be, of course, a point beyond which environmental pressure will limit further population increase but such limitation would involve a catastrophic fall in what we regard as a reasonable standard of living. To prevent, or postpone, such an event is the task to which our statesmen, our scientists and our farmers must now address themselves.

In common with all other agricultural countries, New Zealand has one strict limit on its production potential—the area of its land suitable for farming. The preservation, development and utilisation of this most precious of fixed assets must therefore be the principal and chief concern of the industry and the community itself, since this is the only way to continued prosperity. If in New Zealand the word "statedmanship" has any meaning at all then, surely, the development, conservation and protection of our land must be one of the chief concerns of those who exercise government.

The total area of "Occupied" land is approximately 18 million acres in English grass and 13 million acres in native grass and tussock. A recent unofficial survey of the area of unimproved or totally reverted land in the Dominion, capable of development into sound farming land is 2,360,000 acres. Some of this may be included in the figures of occupied land, all of which is not necessarily in production.

Mr. J. Bruce Brown (Assistant Fields Superintendent, Land and Survey Dept.) in a most competent and valuable paper which he recently presented on Land Development, estimated that when the 2,360,000 acres were finally developed they would support some 4,800 dairy farms and 3,800 sheep farms producing at present prices some £27,000,000 annual revenue. (NOTE.—The adverse balance of trade in 1954/55 was £26,000,000).

The present rate of development of unimproved land is approximately 137,000 acres annually; made up by Lands Department, 50,000, Maori Affairs Department, 7000 acres and private developers estimated at 80,000 acres. Whether this rate of development can be kept up depends on many factors, among them available capital, labour and materials. It can be assumed that easier land will be developed first and more quickly than some of the harder and more remote country. A wide range of community facilities are also required and capital needs for these may govern the rate of development. At the present rate new land resources will be used up in about 17 years and, even

if the annual rate is much less than that quoted, will run out long before the population has reached the four-million mark.

Unfortunately, there lies a heavy entry on the debit side of this land account. Every year enormous areas of highly fertile and productive land are lost for ever to primary production. Around all the centres of population a mushroom growth of houses, shops, factories, schools and other community facilities is devouring our best land at an unprecedented rate. For ease of development it is always the best and flattest land which is most sought after and even Government Departments and agencies select land of this type rather than face the extra cost of development of more difficult sites. As the population increase continues, this annual wastage of vital land resources will increase with it and it is high time that the importance of some form of forward planning and control of land use was realised.

I have tried to obtain figures of the annual rate of alienation of agricultural land to urban purposes. Published statistics being silent on the matter, a direct request disclosed the staggering fact that no one in Government circles has thought it worth while to collect the information. A curious omission when one remembers that such important matters as the number and sex of our backyard poultry are carefully collected and studied by earnest statisticians.

Since so many members of this Society are engaged in research, perhaps I may be forgiven for the observation that the organisation in New Zealand of this vital service presents a most curious picture.

The Department of Scientific and Industrial Research carries on research related to agriculture in the fields of botany, crops, entomology, fruit, grass, hops, plant diseases, tobacco, wheat and soil survey and has recently ventured into the animal field by carrying out experiments on bloat and other dairy animal matters at Grasslands.

The Department of Agriculture deals with horticulture, viniculture (including wine making), apiculture, field crops and field experiments, soil and soil fertility, soil biology, irrigation, weed control, animal research over a wide field, milking machines, wool and many other related matters.

The Agricultural Colleges do a certain amount of research covering part of the same fields, paying some attention to farm and animal industry. The colleges receive grants from D.S.I.R. (this year £8,000 each) for the purposes of agricultural research.

The Veterinary Services Council, too, take a hand and conducts research at Gisborne and Eltham into some special problems.

The Dairy, Wool and Meat Boards each support research efforts in their particular fields. The Dairy Board through the Dairy Research Institute, its Herd Improvement Council and its team of Consulting Officers; while the Meat Board has just set up a Meat Research Institute which is to conduct animal and other research in the meat producers' interest. D.S.I.R. makes grants to the Dairy Research Institute but not to the Meat Research Institute.

The N.Z. Fertiliser Manufacturers' Research Association and the Cawthron Institute are also in the field; the latter concerned with field crops, tobacco and entomology and both receiving grants from D.S.I.R.

In his 1955 Annual Report, the Secretary, D.S.I.R., comments on the value of Research Associations. The principle that industries should substantially support their own research efforts is undoubtedly

sound and the Agricultural Industry could well contribute much more than it does but, in the Agricultural field, the setting up of separate research associations must have the effect of further dispersing vital scientific manpower resources and make even more difficult any attempt at co-ordination. Even within the Department of Agriculture there is wide dispersal of research effort between Divisions each of which tends jealously to guard its own territory in a general atmosphere of the right hand not knowing, and not wanting to know what the left hand is doing.

A vast amount of completely unco-ordinated effort in terms of scientific manpower is being expended upon what are, after all, national problems. The total cost is enormous and duplication and overlapping of effort must occur, since there is no single authority or body which can establish priorities or direct or co-ordinate the work. There is, indeed, no single point at which the various Government and Government-aided institutions meet even for consultation, and contact between them is largely on a personal basis.

It is quite extraordinary that two entirely separate Government Departments, under different Ministerial and Civil Service leadership, should both be operating in the field of agricultural research and, presumably, competing for the allocation of funds for the same purpose.

That New Zealand owes a vast debt to the work of its agricultural scientists is beyond doubt. That many of them have done, and are doing, work which attracts world attention is equally true and overseas organisations and countries appear to value their services much more than do their own countrymen. The credit for brilliant work, however, belongs to the men who have done it and not to any organisation behind them. Much publicity has recently been given to the extremely low salaries paid to our scientists and a comparison between those paid here and those in Australia shows that the scientist on the other side of the Tasman is twice as well off as his colleague in New Zealand. The Public Service List shows a salary of £570 per annum being paid to a biochemist with a Masters Science Degree—a sum far less than that being earned by any unskilled labourer or by the least rewarded member of the industry which the biochemist serves. Even in Government service similar disparity exists for, had the biochemist entered the Department of Health with an equivalent medical degree, he would have received twice the starting salary. Many other comparisons could be made—the Superintendent of one of our famous research stations receiving less than a manager of a municipal slaughterhouse and the wage sheet of a boy of 17, who, just having left school and working in a freezing works, was earning at a rate nearly equivalent to the salary of his father, a senior research officer.

As part of a new national approach to the problems of the future a most urgent need is the complete reorganisation of research in the whole field of agriculture coupled with a much more realistic scale of salaries for scientists. In place of the present system of unco-ordinated effort with no one person or body with the right or opportunity to decide priorities, the situation could best be met by the setting up of an Agricultural Research Council on similar lines to that in Great Britain. This body should take over all the agricultural research activities of both Department of Agriculture and D.S.I.R. and be the executive and administrative authority for this purpose. It should receive grants from the Government and industry and ensure that they were effectively used in the national interest. The Council should have representation from the Government, the University and the Producer Organisations and include in its member-

ship some working professional scientists. It is essential that the Council should be an authoritative and not a consultative body. It should be the employing authority for its research workers and freed from control by the Public Service Commission. This would enable scientific salaries to be related to those obtaining overseas without consequential effect on the whole P.S.C. salary structure. It would enable New Zealand to obtain, when necessary, the services of overseas scientists and retain some of those of its own who are so rapidly disappearing to better paid posts in other parts of the world.

The proposal to set up an Agricultural Research Council is by no means original and has been advocated by many thoughtful people with experience of the problem and the defects of the present system. The argument that Government cannot hand over control of the spending of public money is not a valid one. The University, the State Advances Corporation and the Education and Hospital Boards are all examples of a precedent set long ago.

It must be borne in mind that the object of agricultural research is to bring about higher, more efficient and more economic primary production. This can only be achieved by evolving techniques which the average farmer can be expected to handle effectively and the presentation of these techniques is the task of the extension service. Here, again, we find the same haphazard and unco-ordinated methods which characterise research. It would seem obvious that this service should be handled by the Department of Agriculture's Extension Division which is, however, also heavily involved in research and the task is shared with the Animal Industry, Animal Research and Dairy Divisions. The Extension Division will advise on soil, grass production and farm management but not on anything to do with animals. For them the Animal Industry and Animal Research Divisions, working in uneasy partnership, provide the answer. Should the farmer need advice as to what goes on in his milking shed, that is a province sacred to yet another, the Dairy Division and a third expert has to be called in. Since the Dairy Division's Instructor combines the duties of Instructor and Inspector, his presence is not very welcome and his advice may not be sought. If there is one available the farmer may call in the Dairy Board's Consulting Officer who will consider his whole problem.

Looking at all these efforts from the receiving end, the earnest and enquiring farmer is bombarded with a large quantity of excellent advice given rather in the atmosphere of "No connection with the firm next door." Rarely is any of the advice related to the farmer's own personal problems of ability and finance, and the following story illustrates what can happen.

A farmer purchased a small dairy farm paying a high price per acre. The fencing on the property was falling down so he sought the advice of the Department of Agriculture, one of the officers of which went to considerable trouble to design a complete new fencing layout. This was carried out at a cost of £30 per acre. The Dairy Division condemned the delapidated milking shed and advised its replacement with one costing £1,500. A Dairy Board Consulting Officer was asked for advice on the purchase of a herd of cows. An extremely good tested herd was found but it cost about twice that of an average grade herd. Finally he had soil tests taken and, acting on the advice of yet another expert, embarked on expensive topdressing programme at an initial cost of £6 per acre. At the end of his first season his financial position was such that the Bank foreclosed on its mortgage and put him off the farm. He may have been foolish but he was ruined by too much excellent advice, none of which was related to his real problem of how to establish himself on a dairy farm within the limits of small capital. This kind of thing may not happen very

often but that it can happen at all is not a reflection on the individual officers, each of whom gave excellent advice, but upon the organisation, or lack of it, behind the extension service.

Good farming must have as its first object the building up and improvement of the land itself, coupled with the maintenance and development of the fences, drains, buildings and other things which make it a farming unit. Production gains, made at the cost of neglecting these things, are not progress but cashing in on capital.

Before any new techniques are presented to the farmer by the extension service, they must be examined very carefully in the light of the effect they will have on the running of an efficient farming unit. What will be the cost in man hours. If significant, what else can profitably be left undone in order to fit the new technique into the already overcrowded day? What will be the cost in money and how will that affect the basic economy of the farm? If it is possible on a well established unit, will it be practical economics on a farm saddled with a load of debt repayment? No one sitting in an office in Wellington or anywhere else is likely to find the answers to these questions. Even trial on institutional or college farms may not give correct indications because conditions there are so utterly different from those obtaining on a one or two-man unit where everything is limited by the time available to one or two pairs of hands and the need to consider a tight financial budget. The only real test will be given by trying the new techniques on actual small farming units where they will be found possible or, if not, discarded.

The farmer needs advice from a man who can consider his whole problem not disconnected bits of advice from a series of specialists. It is the extension worker who should be backed up by a team of specialists to whom he can turn for help when needed. If he could live on a small economic unit, among the community which he serves, the farm could, itself, be a demonstration of the new ideas. It should not be impossible to devise a scheme whereby such farms could be used as a part of a national land settlement scheme.

Extension work, like research, does not lend itself to civil service type of control with its emphasis on regulations, form filling and private empire building; all of which seem to be inseparable from any government department. A logical development of the suggestion made about reorganising research would be to make the proposed new body an Agricultural Research and Extension Council with the University taking a large hand in the work of adult education in this field. All that can be said about scientific salaries applies with equal force to those paid to extension workers, whose conditions of employment and salaries are even worse.

While mechanisation has produced substantial production increases during the past few years, in the same period the proportion of people employed in primary industry has been steadily falling. The high cost of machinery places a strict limit on much further progress in mechanisation and potential increases from this source must have been already substantially realised. It is obvious that the responsibility of constantly increasing production cannot be borne on the shoulders of a constantly decreasing labour force; which now stands at less than 19 per cent. of the national total.

When our system of agricultural education is examined, the full extent of general and official indifference is disclosed. The official figures for 1954 show a far worse situation than that disclosed three years ago, when this Society gave lengthy consideration to the educational problem. Agricultural Courses, where they exist at all are still carried on under extreme difficulty; frequently without qualified

teachers or any facilities of a practical nature. The total number of Post-primary teachers with degrees in agricultural science is only 32 and these are not all engaged in teaching agriculture. Of the 56,589 post-primary pupils, only 2,394 took an agricultural course. Of the 13,308 children taking school certificate, only 382 took general agriculture and I have been unable to ascertain how many of these few passed the examination. The Department of Education said that the information was not of much significance!

At the University, of 10,803 students only 78 were engaged at some stage of agricultural degree work. Of a total 5,542 holders of bursaries, 42 were concerned with agriculture. Degrees completed were 1,162 but only 19 were in agricultural science. Worst of all, in 1955 only 12 students commenced degree studies.

The only bright spot in the educational picture is the rural field cadet scheme which, largely due to vision and enthusiasm of one man, is training young men in farm valuation and management. Oddly enough, this is done, not as one might expect, by the Departments of Education or Agriculture, but by a money-lending institution, the State Advances Corporation!

Such is the educational position, from which we are to start a period of unprecedented expansion in primary production; with all that this means in requirements of research and extension workers, teachers and better farmers. For nearly three years this Society, backed by almost all the Industry organisations, and with the full support of Federated Farmers, has been asking the Government to have this important aspect of the problem examined.

I believe that we now face a basic problem, the solution of which must proceed any other. In a very short number of years there has grown up in New Zealand a substantial urban population with completely urban ideas and outlook. The proportion of people engaged in agriculture is falling and urban life, with its shorter hours, better remuneration and lower standard of values, is tending to draw off from farming the brighter girls and boys of rural families. As the rural population decreases in proportion, so, too, decreases its political significance, and it may be expected that rural matters will not receive the attention, warranted by their vital and fundamental nature to the economy and prosperity of the State.

The whole story of the development of New Zealand to its present state, is a saga of human endeavour which can only fill the observer from overseas with wonderment and respect. The heroic labours of the devoted men and women who were its early settlers have made possible the existence of a happy, carefree and untroubled community, enjoying a standard of living hardly equalled anywhere in the world. To all of those who have contributed, or are contributing, to that happy state, with brains, devotion or just hard sweat and toil, we owe an immense debt of gratitude. But the situation of to-day bears no resemblance to that of the past. For years now the rising tide of population has indicated that new problems await. For the first time, pressure on living space will make itself felt in New Zealand.

Immense new tasks lie ahead and we have seen how we are equipped to meet them. Our new land resources are rapidly running out. Every year much precious soil is being gobbled up by uncontrolled urban sprawl. The organisation of our research and extension services commands astonishment rather than respect. With a very few shining exceptions, our educationalists and teachers have lost all interest in agriculture. Each year fewer men are trained to help our farmers make the great effort which the future will demand. Each

year more of our brilliant young scientists are lost because they are not content to accept, any longer, the poverty stricken reward for their work in Government service.

For many years governments, both of the Left and Right, have ignored the so obvious inferences to be drawn from the figures and information at their disposal. For many years, too, lack of interest, or lack of vision, has left New Zealand with no clear-cut and progressive agricultural policy. Party policies have concerned themselves with the political advantages of attracting the growing urban vote; while many extravagant secondary industries have been allowed to fritter away the manpower and resources which could have been devoted to securing national prosperity.

Every New Zealander, who cares or thinks at all about his country, must now face the problems which the future is bringing so rapidly to us. The question must be answered. How are we to support a population as large as four or more millions? The best possible efforts in agriculture cannot indefinitely provide the solution. Our industrial life must be swung to the development of manufacturers, using raw materials which are available in the country. In timber, paper, other timber by-products, plastics, woollen manufacture and the leather trade, there is room for enormous progress. In agriculture we need a clear and definite policy, backed up by a complete reorganisation of the existing system of research and extension and linked to a new and revitalised system of agricultural education. The whole problem is so large, and involves so many inter-acting considerations, that the first step might well be the setting up of a study group, at the highest level, charged with the responsibility of producing, for the consideration of Government and the Nation, ideas upon which plans for the future could be based.

At present, the New Zealand vessel of State can be likened to a large ship in mid-ocean. The sun shines brightly; the flag flutters bravely in the breeze; the crew are busy painting the upperworks. While in the saloon the passengers dine in luxury. The captain stands on the bridge and, with a beaming smile, assures all who care to listen that their affairs are in a state of unparalleled prosperity. On the horizon, gathering clouds indicate stormy seas ahead; while closer examination shows that the ship has no rudder, no chart, no known destination and her precious resources of fuel are rapidly ebbing away.

If this New Zealand is to continue in happy prosperity then, as a nation, we must face the challenge. We must take stock of our resources. We must bring to the task new methods, new ideas, new energy, new enthusiasm and, above all, a new vision of the future.