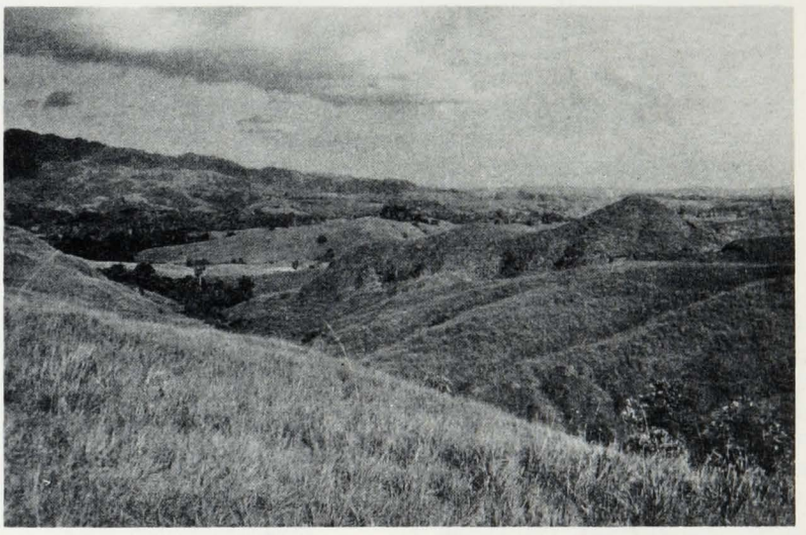
The NZAEI NEWSLETTER

No. 24 October 1971

Cattle Ranches in Indonesia

Terry Heiler who has spent two short periods working in the islands of Indonesia under Colombo Plan auspices, returned from his second visit a few weeks ago.

He was in Indonesia as a member of a team investigating the feasibility of initiating large scale cattle raising for export. The team included an agronomist, a soil scientist, a farm management consultant and Terry as hydrologist. Professor Stewart of Lincoln College was team leader.



Typical terrain on the island of Sumba.

In their first visit the team surveyed the areas which had been previously marked as potentially suitable for development and eliminated those found unsuitable on a closer examination. This was a considerable task as the sites were scattered over three islands—South Sulawesi, which is approximately the area of the South Island, and Sumba and Sumbawa, each about half the area of the South Island. There were transport problems in reaching the sites and from then on each area running into thousands of acres had to be examined on foot.

Five sites were finally identified as worth closer investigation. These consisted of three areas in South Sulawesi totalling 50,000 acres, a single block of some 50,000 acres on Sumba and a smaller area of two to three thousand acres to be used for stock breeding on the same island.

On their second visit the team concentrated their efforts on a detailed examination of these five blocks.

There are considerable variations in the types of land on the islands. On South Sulawesi the block is mostly gently sloping downland much higher than the adjacent heavily populated delta area where rice is grown. On Sumba the chosen areas were composed mainly of limestone terraces, each terrace being relatively flat and extensive and covered by a savannah type vegetation. Here there is an annual burn-off by the local people, for they already use the land for grazing their own zebu breed of cattle. There is some small amount of export arising from this grazing which also provides meat for traditional feasts. Mainly however, the cattle are looked on as tangible wealth, for the islanders are subsistence farmers with no cash crops. The cattle provide their only insurance against disaster or misfortune.



The survey party and accompanying officials at a camp-site.

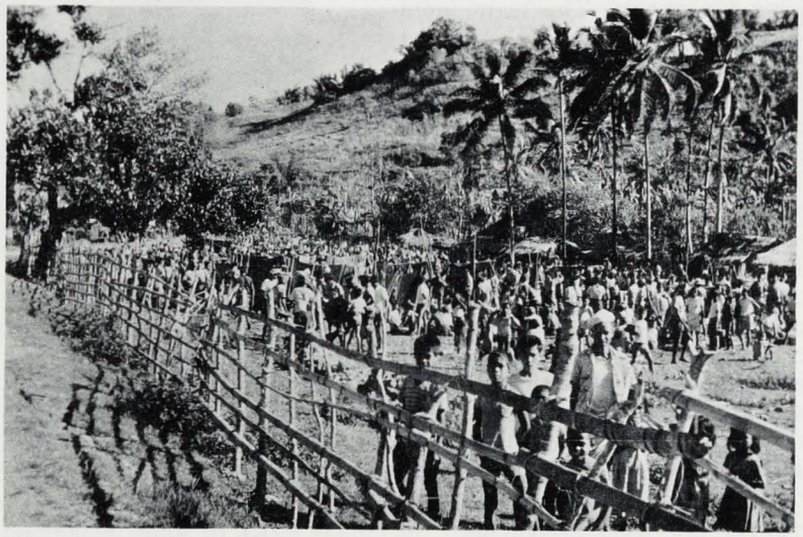
Each of the five sites was inspected on foot and evaluated. In terms



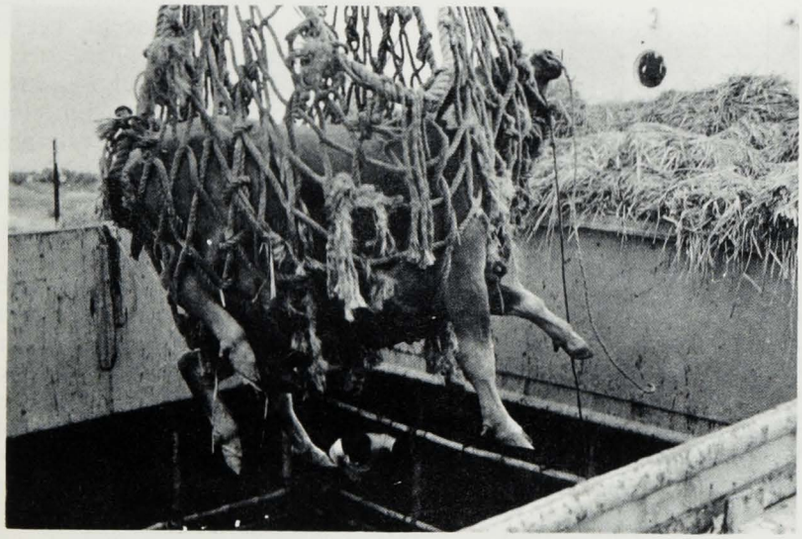
The temperature—32 degrees Celsius.

of soil this meant the capacity to sustain vegetation and to support improved grasses, together with an assessment of the quantities and types of fertiliser required. From the agronomic point of view the vegetation was examined and species either identified or specimens brought back for examination. The extent of the water resource was assessed and field information was collected which, when analysed, would indicate what problems could arise when it became necessary to augment the supply to cope with future needs. The farm management aspect included the difficulty or ease with which access within the ranch could be provided, bearing in mind the very considerable area, together with providing for a homestead, and ancillary buildings as a base from which the ranch would be run.

The scheme, if it goes into operation, will at first be managed by a Livestock Development Corporation which will be formed for this purpose. This corporation will be run as a private company as far as the provision of capital and management for profit. Finance would come from a World Bank loan and the World Bank requires a certain minimum internal rate of return on the capital advanced to make sure that the operation is viable. From a government policy point of view however, it will be regarded as a state controlled institution.



Market day at the country town of Waikabubak.



At present there is some export of cattle. Meat on the hoof being loaded for Hong Kong.

The overall aim of the scheme is to introduce modern livestock technology into suitable areas where what livestock farming there is at present is carried on in a traditional way and where very great improvements in production are possible. The corporation will expand its operations as the opportunity presents itself by identifying, studying and developing other areas of unoccupied grassland. Associated wtih the operation will be an increasing involvement of local people in the operations of the company both in terms of training in the new methods and in work and management. At the same time farmers on the periphery of the ranches will be encouraged to learn and adopt the methods used on the ranches. Finally, the

ranches themselves will be split up and the land divided into economic units and handed back to the local people again who by virtue of their training and experience will be able to carry on the improved methods.

Overall the scheme is not very different from our own land development by the Lands and Survey Department except that training and development will reach over a very much longer time.

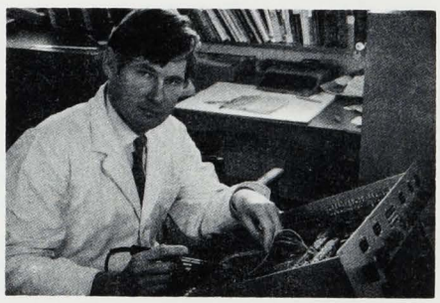


Local industry. This man manufactures roofing tiles. The tiles are formed by hand over a pattern, left to dry in the sun and then burnt hard in a simple kiln.

Meet The Staff

Peter le Quesne joined the College on 3 December 1970 as the Institute's first electronics technician. Over the past few years there has been a considerable increase in the use of electronic equipment both for measurement and control purposes by the Institute. By the end of last year it became obvious that a technician was necessary. Peter is responsible for the technicial efficiency of all electronic equipment installed in the measurements laboratory or operated in the field. As well he carries out general maintenance and builds up any special items required for experimental work. He also has the responsibility of advising the engineer in charge of the measurements section on the selection and purchase of any new measuring instruments. Measurements using electronic methods are employed on many Institute projects and will be used more and more. The testing of safety frames, the aerial spraying investigations and aspects of soil erosion are examples. It is this type of equipment and its operation which constitutes Peter's special domain.

Peter who is now a member of the New Zealand Electronics Institute was born in Napier and comes from a farming background. After attending Napier Boys' High School for four years however, he decided to take up electronics in which he had developed a particular interest. Initially he was employed by the then Broadcasting Department as a technical trainee at station 2YZ Napier. In 1955 with the aim of broadening his area of technical experience he packed up and went off to the United Kingdom where he took a full time 15 month course which covered electronics, radar and other navigational aids. The training was taken largely with the Decca Navigation and Radar Company. He returned to New Zealand in 1957 and since then apart from a period as an electronic equipment sales engineer has been working mainly on the maintenance of marine electronic equipment. This included radar and telecommunications and in several cases responsibility for the installation of major comunications networks at the larger seaports.



Peter le Quesne

The summer of 1958/59 was spent by Peter down at the Antarctic working with the ionospheric physics programme of the I.G.Y. summer scientific party at Scott Base. While down at the ice, besides operating and maintaining the measuring equipment he was also placed in charge of the 36 huskies—probably in tribute to his early farming background.

Peter's first major construction project with the Institute has been the building up of the complex switching and voltage source circuitry which will be used with this year's aerial spraying investigation programme.

The Aerial Spraying Research Programme for 1971

The aim of any aerial spraying operation is to use as little spray material as possible and to obtain a biologically effective distribution. However, it is not a simple matter to achieve this efficient coverage and when it is coupled with a requirement for the maximum utilisation of the aircraft it is made more difficult.

A spray droplet leaving a nozzle on an aircraft is subjected to a number of influences before it reaches the ground—if indeed it does reach the ground. There is the effect of aircraft slipstream, drift caused by

wind, updraft currents of air and evaporation.

Under certain weather conditions droplets of a size small enough to be biologically desirable will often evaporate before reaching the target.

Therefore, there is often conflict between the most desirable droplet size weatherwise which can be relatively large, and the biologically effective droplets which are often no more than a fine mist.

The NZAEI aerial spraying research programme for this year will be concentrated on developing methods for evaluating the performance of aircraft spraying systems taking into account both the operation of the system and the effects of the weather. Using these methods it is hoped that the extreme limits of climatic conditions for practicable operation of any particular spraying system can be determined. It is hoped to develop equipment which operators can use in the field to monitor local weather conditions and to assess the quality of the job.

With this information the operators will be able to decide on the spot the best settings and techniques for the conditions at the time. They will also be able to tell when conditions preclude useful results. This should result in better aircraft utilisation.

Permanent test facilities will also be set up where modified or new spray systems or materials can be evaluated and related to operating conditions. A calibration service establishing swath width and distribution patterns is also to be established.

The work programme for the next 18 months is already under way with a redesign and rebuild of the micro-climate measuring equipment which will make it more portable and more dependable. This work has been carried out by Peter Le Quesne working with Graham Garden who is supervising the research. The design and construction of a droplet generator has begun and this will be followed by experiments to establish procedures for measuring the size of droplets and calibrating the associated sample cards.

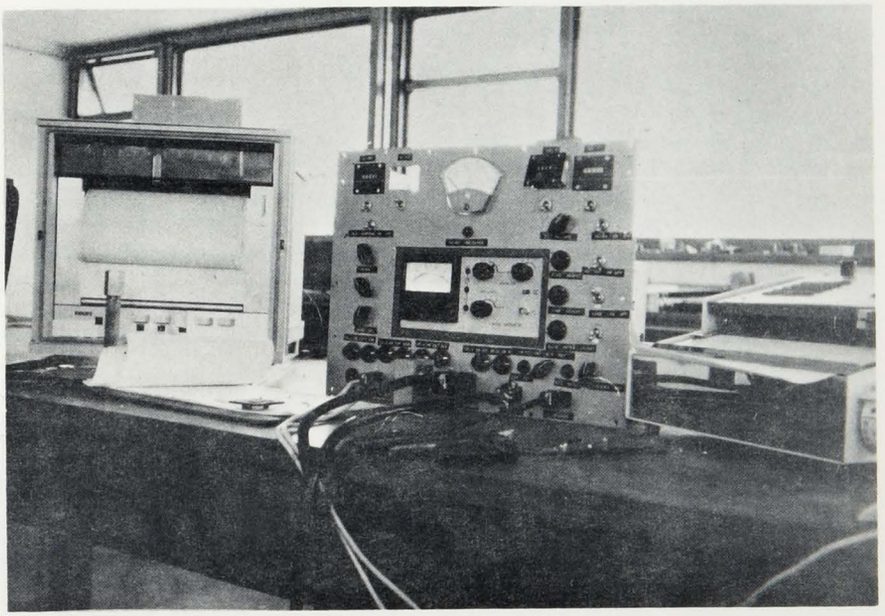
A device has been built in the Institue workshop which will furnish a jet of air some 12in. in diameter and moving at approximately 100 mph. The nozzle under test is placed in this airstream. A high velocity rig is also to be constructed and this will be used to transport spray nozzles at aircraft speeds. In the air jet, of course, the nozzle is stationary and the speed is simulated by air movement.

Before commencing the extended field tests a limited number of aircraft spray runs will be carried out at Lincoln College to check the measuring and recording equipment and as a general shake down.

With the equipment and methods proved it is hoped that flight tests can be arranged in the Rotorua area at the period when forest spraying is carried out. The large acreages involved will overcome the problems connected with arranging trial flights over the small areas usually treated in most farm spray programmes.

By the end of eighteen months' work the team hope to have learnt a good deal about the performance of aerial spray systems from both laboratory work and flight tests. It would be unrealistic, though, to suggest that all problems will have been solved. Nevertheless, many of the problems associated with aerial spraying will have been identified and methods developed to investigate them.

These methods will form the basis of the calibration service which will be similar in function to that provided for ground fertiliser spreading equipment and which has been in operation for the past two years.



The re-engineered power and distribution unit flanked by two recorders. This equipment will be used in the Rotorua area for extended testing.

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