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PRESIDENTIAL ADDRESS 1996

We couldn't do it without 'em!

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PROLOGUE

The job I found most difficult during my tenure as President of this Society, was writing to members whose abstracts had not been accepted for the conference. The irony is, that a term as President carries with it the implicit responsibility of presenting a paper that does not go through a selection process. Even more ironical is that in 1976, the incumbent President Alan Kirton noted in his annual report to the AGM, the consensus of the management committee was that in future the Presidential address should be an optional rather than an obligatory feature of the conference. Alan had also noted in his annual report, an absence of papers on dairying at the annual conference and that 19 of 53 submitted abstracts had been declined. At the 1996 conference we have a full day of dairying papers and only 11 of 125 submitted abstracts were not included in the programme. Times change - except that the President's address is still viewed as obligatory. Indeed, delegates who attend the opening session of the conference must first listen to the President. Each year there is an air of expectancy as the membership tries to guess what the topic of the address might be, and in the case of some of my predecessor's - how long it will take! Perhaps it is fortunate that nowadays we temper the pontification of age with the freshness of youth by immediately following the President's address with the finalists for the Young Members award.

INTRODUCTION

The impending conference offers the best incentive there is to read (or re-read) Presidential addresses of the past. A retrospective examination of the society's Proceedings reveals that my predecessors have chosen numerous ways of using this forum. For example, addresses during my membership of the society have ranged from Arnold Bryant's (1978) interpretation of the state-of-the-art in the field of dairy nutrition, through Pete Fennessy's (1983) crystal ball gazing to Ken Jury's (1990) review of the genre.

I decided early on to address the topic of the contribution of technical staff to animal production. To acknowledge the assistance, often unheralded, of technicians and support staff to the science and practices that keep New Zealand at the international forefront of animal production. The objective was to remind us that the technical contribution is both significant and fundamental to achieving and maintaining that position. It would be quite simple to develop this address along the lines of "Technicians I have known". But since I am younger than the Society, there have been many individuals that I do not know. And so, I am restricting myself primarily to making general statements. Notwithstanding that, some comments will pertain to individuals, and I hope that those people and their peers will know who I am talking about.

To consolidate my thoughts I first approached some past winners of the society's McMeekan Memorial award whose citations indicated that they were being recognised for their contribution to the science of animal production. The response to a question asking about the technical staffs' contribution to their work was epitomised by the answer of a well-known expatriate Australian who at various times has controlled, cajoled and on occasion has even steam-rolled this Society. "That's easy mate", he said "we couldn't bloody do it without 'em". That simple riposte at once provided me with a title, an incentive and an insight into an eminent researcher's appreciation of the contribution his technical staff have made during his career as a leading animal reproduction scientist in this country.

THE SCIENTIST'S EYES, HANDS AND EARS

The technician is the eyes, hands and ears of the scientist. A scientist who has an experimental programme under the control of a competent technician is free to spend time thinking and developing ideas.

Observation is a crucial component of the technician's skills. As an example, consider the research group that, having started work on a large project involving measuring a tissue with which none of them was familiar, had tipped much of the material in the bin at the end of several hours work. This had raised the question from all concerned "What does this stuff look like?". A technical trainee, whose only opportunity to look at the material was during the smoko break, tentatively asked "Could it be this?". A closer look revealed that it certainly could, and immediately, material that had previously been overlooked became the basis for a definitive study.

Manual dexterity is a further attribute, both in the laboratory and the field. The technician may be called on to work with microscopic tissue samples, delicate elec-

tronic equipment and large, unruly animals - all within the course of the same working day.

Furthermore, the technician who is attuned to the milieu will hear and pick up on any converstaion, media items and informed discussion that have the potential to enhance the experimental programme by improving the science, making the job easier or making use of new technologies.

TEAM WORK

For any research programme to work, the scientist and technician must have a symbiotic relationship. The scientist/technician team often has to work closely together. A team consisting of an average scientist and excellent technical staff is likely to have a higher output than an excellent scientist with only average technicians, simply because the technician invariably has a considerable input into the day-to-day management of the experimental programme. There is no place for loners on either side of the equation. If one chooses to work independently of the other, the entire programme is immediately destabilised.

Perhaps the most important attributes though, involve the relationship with animals themselves. The animals must feel comfortable and unstressed in order that valid answers are found to scientific questions. The animal production technician should have a rapport with animals but more importantly must enjoy the work.

It may come as no surprise to some that the technicians' contribution to teamwork often doesn't end at 5.00pm. Frequently, technical staff are also the driving force behind the social events that are associated with the workplace. The contribution of extra-curricular activities to the teamwork that produces good results should never be underestimated.

THE GOOD AND THE BAD

There are some direct comparisons that can be made between excellent and poor technical staff (see table 1). The excellent technician has wide ranging, specialist skills and the ability and desire to develop new ones. Each task is undertaken with attention to detail, an attribute that can have a tremendous impact on the success of a research programme - as discussed above. These qualities are accompanied by the ability and confidence to expand ideas and challenge protocols. In short the excellent technician is a professional. The poor technician on the other hand is content to maintain a relatively low skill level, and moreover may lack the motivation to improve it. The approach to the job is likely to be poorly thought out. The poor technician is simply doing a job, and consequently making only a mediocre contribution. In 'Labcoats to Gumboots', George Davis (1995) drew attention to the dramatic effect of the abilities of different technicians. Where one technician can do considerable damage to a data set, another can retrieve it.

TABLE 1: Attributes and inadequacies of the Excellent and Poor technician.

EXCELLENT TECHNICIAN	POOR TECHNICIAN
Specialist skills	Undeveloped skill level
Meticulous	Careless
Ideas challenged	Robotic
Professional	Just doing a job

INNOVATION

Often, a technician's contribution to the miasma of scientific knowledge comes as a complete surprise rather than as the result of a considered experimental programme. The technician, who shortly after finishing docking lambs from an experimental mob remembered that the rams were to be kept entire, immediately asked a previously unconsidered question: "How much time must elapse before the removal of rubber rings is too late to save the testes?" An unreplicated experiment (technician-speak for "It never happened again") gave no definitive answer but we now know that the timespan is - longer than it took to muster the paddock, yard the mob, frantically upend every male lamb in sight (and some of the females in sheer panic) and release the upper scrota from the strangulating grip of a rubber ring.

Commercialisation carries with it a unique requirement for an innovative approach. An excellent example of this is the introduction of Androvax to the NZ marketplace. Androvax was aimed at a market niche in which a different product, that had a similar end-point, was being sold. A 3-4 year patent battle slowed progress until finally the go ahead was given. Two further problems occurred. Firstly, the rival product was not a long-term commercial success and secondly, the application was seasonal and only three months were available in which to manufacture, package and prepare a market for Androvax. The whole project was handled by the senior technician. This included solving problems as diverse as developing a sterilisation protocol, that even the principle chemical supplier found difficult, to deciding packaging details and ascertaining which colour combinations were unsuitable for particular markets. In the first year a total of 200,000 doses of the product were made available - all of them hand packaged. A complete exercise of that nature is 'just part of the job'. There is no publication option, and the continued sales of the product rapidly require the services of a commercial manager. The opportunities to officially recognise, let alone reward the technician's contribution are virtually non-existent.

THE MODERN ANIMAL PRODUCTION TECHNICIAN

Twenty to thirty years ago technicians were employed, more often than not, as school leavers. The majority of training was 'on-the-job' and in the '70s the country's Polytechs had a continuous supply of NZCS students. These were almost invariably technicians earn-

ing a part-time tertiary qualification, encouraged and (more importantly) funded by their employers. Most technical staff involved in animal production worked in a macroscopic world and dealt with the animals and their environment. With the technology explosion the working environment became microscopic almost overnight, and now in the '90s it is molecular and frequently deals with concepts and intrinsics rather than the physical. For example, lambing potential was initially measured by counting lambs on the ground. The development of surgical laparotomy allowed accurate measurement of ovulation rate and therefore estimation of absolute lambing potential, along with the limited ability to make repeated measurements. The technology boom gave us the laparoscope which permitted in situ observation of the ovaries to measure ovulation rate and greatly enhanced the opportunity for making repeated measurements. The technology was adapted to numerous species and refined so that observations became objective. Now predicting lambing potential is rapidly becoming a concept rather than a physical measurement. In the '90s the laboratory identification of single genes that control ovulation rate is becoming a reality.

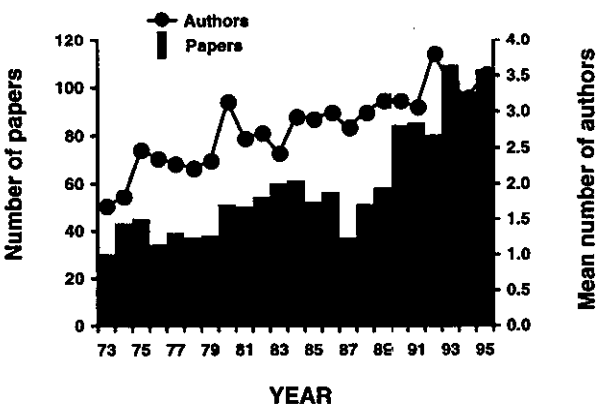
Blood sampling has progressed from simply inserting a jugular drain, via using rapid draw evacuated tubes, then indwelling jugular catheters to modern remote sampling methods from which human intervention can be eliminated during sampling periods. Each of these refinements reduces the stress on the animals and improves the validity of results.

Data acquisition and storage has moved from field sheets to spreadsheets. While these have become continually bigger and more complicated, at the same time the wonders of electronics have made them physically more compact and infinitely more versatile.

Concomitant with these changes is a dramatic change in the educational level expected of the new technician. On-the-job education is no longer a viable option and the majority of technician positions require a graduate degree. The modern technician usually has a qualification that 30 years ago would have guaranteed a job as a scientist. Even that historical differentiation between scientist and technician has been eroded. Both are often employed, in the CRIs at least, under the same designation. This is an indication that both scientist and technician can make a similar contribution to the science of animal production. And yet where are the technicians in this society? NZSAP offers the best opportunity there is for professional interaction in our discipline. The value of any conference is almost evenly distributed between the formal sessions and the after hours socialising. We have here the best opportunity there is for the exchange of ideas, methods and techniques. More often than not the implementation of new methodologies into a research programme will fall to the technical staff. We should therefore be encouraging technicians to join this Society and attend conference annually rather than on the ad hoc basis that offers itself every four years when the conference is "at home". As a society we encourage students to attend on the assumption that they will one day be scientists. We should encourage technicians just as enthusiastically - they have the potential to make or break a scientific programme.

In the current research climate the technician often has an even more important role. As scientists become increasingly embroiled in the intricacies of the administrative requirements of funding applications, financial planning and furnishing reports, it is often the technical staff who are left to maintain the day-to-day routine of managing animals, people and data handling. More and more technical staff are running their own projects. In the twenty three years that I have been a member of this society the number of papers presented at the annual conference has increased from 30-40 to over 100 and the mean number of authors per paper has risen from 1.7 to 3.5 (see figure 1). In the 1970's very few authors were technicians. Now, with increasing recognition of the team approach, technical staff are frequently included in the list of authors. But, more interestingly, it is becoming increasingly common to see technical staff as senior authors. Is this just a reflection of the times or recognition of the level of training and input that technicians now have?

FIGURE 1: The number of papers presented each year to the NZSAP annual conference from 1973 to 1996, and the mean number of authors per paper.



In 1995 Chris Burke won the Young Members award presenting a study undertaken when he was employed as a technician. There is a high likelihood that reprint requests, especially overseas ones, are addressed to Dr Burke, and perhaps even Professor Burke. The concept that a doctorate is not a prerequisite for writing a scientific paper is often not particularly well grasped.

NOT ONLY SCIENCE TECHNICIANS

The contribution of technical staff to animal production in New Zealand is not limited to those involved principally in science. The New Zealand dairy industry, for example, quite simply could not survive without the input of numerous technicians, many of whom are involved in routine laboratory procedures that are critical to the maintenance of production levels and animal health. Per cow production is continually improving, due in no small way to the influence of top sires distributed into the

country's herds by numerous artificial insemination technicians. Continued monitoring of production levels is maintained by a large group of herd testers. The health of the national herd is in the capable hands of the laboratory technicians who perform countless somatic cell counts and the livestock officers who monitor the tuberculosis status of the country's dairy, beef and deer herds. This society has in the past honoured three technicians who have had a significant effect on the NZ dairy industry, with the Sir Arthur Ward Award. Des Clayton (1984), Max Cooper (1986) and Brian Curson (1993) have all made notable contributions both individually and as team members.

A further significant contribution to animal production is made by a large group of 'unpaid' technicians to whom we are becoming increasingly indebted. Numerous research programmes, especially those that require large numbers of animals, are centred on commercial farms. The observational, data collection and record keeping skills of numerous farmers, their families and employees have historically been pivotal in development and testing studies. As the expense of maintaining property continues to impinge on research organisations it is highly likely that the requirement for this input will increase still further. Ask Jock Macmillan how important the Clausen herd has been to the research of a number of different people over the years. Currently, the third generation of Clausens is intimately involved in research and development studies that have identified, modified and corrected anoestrus in dairy cows.

CONCLUSION

I have tried to demonstrate that technicians are an essential component of the teams that have been, and continue to be, responsible for NZ's reputation as a leader in animal production. Whether it be as an integral part of a science team, the expert who puts technology onto the farm, or as the lab person who performs innumerable routine monitoring procedures each contributes immeasurably. However, despite its significance, more often than not that contribution is largely anonymous other than to those intimately involved. David Wallace (1991) concluded his Presidential address by saying of his year as President: 'Jock Macmillan persuaded me into this job. If you think I did well, tell me. I'd enjoy that. If you think I haven't, tell Jock. It's all right, he can stand the pain'. I would end my address by paraphrasing David. If you think your technical staff have done well, tell them. They'd appreciate that. If you think they haven't, tell them that also. It's all right, they'll learn from their mistakes and everyone will benefit. Because, no matter how you look at it, we couldn't do it without 'em.

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