AAGA PROCEEDINGS

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Editor: Ken Thomson

The AAGA Committee is grateful to all colleagues and former students who have contributed material, and to those who have helped otherwise with the production of this volume.

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Chairman’s Introduction, by Dr Ian E. Edwards

Welcome to these ‘Proceedings’, in which I trust you will enjoy reading the business of the Association and the range of articles included. We remain very grateful to the various contributors, particularly Ken Thomson both for articles and for editing. Articles and news of graduates for future editions are always appreciated.

We are also grateful to Ken in his role as Secretary and our new Treasurer Caroline Daniel for the time they have spent endeavouring to reconcile the sparse detail on bank statements and membership list. If you have been contacted to clarify your membership status and have not yet replied, it would be good to hear from you.

Along with supporting current students and these Proceedings, the AGM is the Association’s other main activity. The notice of this and details of this year’s speaker are enclosed. As you will see from the précis of last year’s AGM address, these are interesting presentations. It would be good to see a larger audience attend. Attendance does not mean you will be coerced onto the committee, so if you are around Aberdeen and free that evening please join us. The AGM business is usually short: the talk and refreshments are the principal activities which the Committee hope will keep you entertained.

I am pleased to report that our honorary President Hamish Shiach has retired from the farm at Sunnyside of Folla, moving the short distance to Rothienorman where he and Doreen are settling in well.

After an interesting 2014 with the Independence Referendum and CAP reform, 2015 sees CAP implementation, discussion on land reform, and Agricultural Tenancy Review recommendations. Agricultural education is also under review, with the discussions ongoing between SRUC and the University of Edinburgh about a possible ‘strategic alignment’. Many members may be involved in the above issues over the year. Edinburgh ceased agricultural teaching some years before Aberdeen, but had the first Chair of Agriculture in the English-speaking world in the late 1790s! As ever, the industry needs well educated individuals across the spectrum. As Aberdeen graduates, I trust you will contribute to these and other issues facing the industry in 2015.
FEATURE ARTICLES

São Tomé and Príncipe, by Mike Daw

The following is a much-abridged version of another of Mike Daw’s accounts (mostly written in 1983) of his travels during his many years of overseas consultancy. It is produced by kind permission of Dilly Daw. An Annex - not reproduced here - contains more detail on the 3 projects “identified”.

São Tomé and Príncipe (STP), with a total area of about 1000km² and a population of 100,000, is one of the smallest independent states in the world, situated just north of the equator off the Atlantic coast of Gabon. The country comprises several small islands, but only the two largest are inhabited: Príncipe in the north, and the much larger São Tomé whose southern tip is a few kilometres north of the equator.

I visited this remote part of Africa for two weeks in July 1983 with my colleague Peter Hildreth, a Kiwi livestock specialist. As I have written before, two-person teams are the best, provided that their experience covers the necessary ground and that their personalities are complementary and good-natured. On this mission, we sailed close to the wind on the first criterion but on the second (mutual respect) we were a formidable team. Peter was an experienced ex-FAO staff member who now farmed tropical fruits on a small holding 20 km from Auckland but did free-lance livestock consultancy when asked. I was an agricultural economist in a Scottish College and ran sheep and cattle on a small farm near Aberdeen. I was 7 years younger than Peter but we clicked from the first time we met.

Our client was the International Fund for Agricultural Development (IFAD) based in Rome - part of the UN system but separate from FAO. STP had recently become eligible for IFAD-funded improvements, and IFAD was keen to initiate a modest project ($1 to 2 million) to demonstrate that IFAD was interested in small, as well as large, countries. The first stage was to identify possible investment projects which would benefit small-scale farmers, fishermen or other rural businesses with the ultimate aim of raising incomes, improving food supplies and reducing malnutrition.

Peter and I were the first IFAD team to set foot in STP since its independence from Portugal in 1975. Of course, this “reconnaissance” aspect made the mission – at a cost of about $30,000 - more challenging. Readers may well be sceptical that two men for 5 weeks is enough to appreciate the needs of a poorly documented country, but such concerns may be allayed by the following:

- In any project investigation, one runs into diminishing returns fairly soon for a small country with a relatively uniform agro-climatic situation (not the case in Ethiopia or Sudan, for example).
• There would be at least two more missions to examine and test the feasibility of any project before disbursement could be begun.
• The Government would have a large say in deciding which projects would be acceptable. At this stage, it would be imprudent to go into too much detail when it might reject early ideas.
• Maximum use was made of meetings at many levels (farmers to officials and ministers, and experienced ex-pats).
• Internal or external documents, reports and studies were usually helpful – though not many in the case of STP.
• Field visits allowed visual assessment of crops, livestock, markets, infrastructure etc., and for meeting the population.

**Getting There**

It was 7am on 21st July 1983 that I boarded the familiar two-stage flight from Aberdeen to Rome, although on this occasion I knew virtually nothing about my final destination of São Tomé. I only had two days to meet the IFAD Desk Officer for STP (Volker Zaddach), my consulting partner (Peter Hildreth) and my immediate employer (Paul Harrison of HJ Partnership who had won the contract to field the team). In these two intensive days, Peter and I were briefed, vaccinated, funded and ticketed, alongside a frantic search for information in FAO’s library (an hour away from IFAD by train). But the most frustrating time-consumer was our trip to the Angolan Embassy in Rome to obtain visas for our travel to Luanda, the capital of Angola, 36 hours later. Previous experience had taught me that the less attractive to visitors a country is, the longer and more costly it is to obtain a visa. With a nasty civil war between the Angolan government and Unita insurgents, it is unsurprising that the embassy was suspicious of all travellers to Luanda – even if they planned an onward journey to some offshore islands as soon as possible. Of course, we did get our visas, and even had time to walk and eat in Trastevere and visit the famous English-speaking, air-conditioned cinema (Pasquino), out of the 38ºC afternoon heat of Rome in late July. As a hello gesture to Africa, we even visited the huge flea market of Porta Portese, with its African stallholders, early on the Sunday morning of our afternoon flight.

On the plane, we seriously attempted to read documents on STP, such as FAO’s Rehabilitation proposals and the *Economist’s* Country Report, but all were rather thin on background material. We were still well down the learning curve when we landed at Luanda at 4 am on July 25th. Only four days earlier, I had been marking exam scripts, being a family man, and walking around my ewes and lambs: how different from old colonial days when sea travel allowed ample time to acclimatise and prepare! After long delays to get through Luanda immigration (the plane was full of Angolans returning from studies in the Soviet Union), we decided to wait in the terminal to cash some traveller’s cheques at 7 am. More delays! We managed to announce our arrival to a skeleton UNDP staff, and a jeep eventually took us to Hotel Tropico where rooms are normally booked and paid for 48 hours in advance. Unbribed and unhelpful, the receptionist miraculously found a vacant room for us, and we decamped. We took a very sparse breakfast before contacting the FAO representative who was very concerned at our safety whilst walking around, but proved extremely helpful with our paperwork for our onward flight to São Tomé. We had nearly 48 hours in Luanda (onward flights were infrequent and erratic) which proved to be a serious eye-opener. Along the balmy Atlantic shore line, beautifully lined with palms,
some statues and a long mosaic promenade. It was easy to imagine the attractive life-style of the Portuguese administrators, military staff and professionals who served Lisbon as colonial masters. But in 1975, Salazar severed all Portuguese ties with its African colonies, and nearly all the 4000 Portuguese suddenly went home. With little professional assistance from the “motherland”, five new independent African states were created, and in at least two of these (Angola and Mozambique), major civil wars were still raging 8 years later. Amongst fine old buildings, now unmaintained, and empty shops, open sewers and grim-looking people, there was very little for sale, except black-market Kwanzas selling openly at 15 times the official rate. There appeared to be a fear of authority, and deprivation everywhere was in evidence. We soon found that Russians and Cubans were not welcome in some quarters, and we hoped that our true identity was clear. In fact, we encountered no problems, but people were very wary of two European strangers casually wandering the streets of Luanda. I wrote the following over dinner in our hotel on our last evening in Luanda.

“There is no life except in the high society of the Tropico, a now-forgotten hotel. Well-heeled Angolans come for as near an experience to the old high living as is now possible. You book your meal 2 weeks in advance (negating all hopes of spontaneity) and, grudgingly, “the state” lets you pay a huge sum to arrive before dinner. In the luxury bar and comfortable lounge, the “in-set” of Luanda assemble dressed in good, but similar, clothes. The bar is open but instead of the old array of European spirits and home beers, a coffee pot sits on the polished top. Reluctantly, the locals order their coffee before dinner and are thankful for small (very small) mercies. Outside on the street – viewed through “truth-telling” large windows – the cars, trucks and pedestrians travel along the half-lit streets where shops are sparse and boarded up. There is nothing to buy except an attaché case at $100 or a child’s dress at $50. Retailing is so dead that the stranger wonders where do people obtain their needs, or satisfy their aspirations? But “le marche noir” is the local answer and the foreigner nods intelligently, thankful that he will move on, leaving the Luandan to his dark battle with survival, and his patience with the interminable red tape and records which dominate life in Luanda. The poor seem no better off, the wealthy have been switched from local aristocracy to party professionals, and the middle class have the no-man’s land of half light.”

I was to return to Luanda 7 years later on an FAO crop and food assessment mission to Angola and Mozambique. The civil war was still on, and Luanda seemed just as grey with its siege economy and black markets. My impressions in 1990 were perhaps coloured by being impounded for 6 hours in a cell at Luanda airport on arrival. Unknown to me, my baggage had been left behind in Paris, and I was the last passenger through the immigration system. The local UN office had given me up and gone home, together with my visa! Since I had no access to a phone, I was in an impossible situation – solitary confinement in a hot, sticky cell, incommunicado to the outside. Ever since then I have had a little more sympathy for illegal immigrants to Britain. It was 2 weeks before I was able to buy properly fitting clothes, during an eastbound stopover in Botswana where there were shops and markets. My baggage stayed in Charles de Gaulle airport until I passed through 3 weeks later en route from Maputo to London.
Peter and I left the filthy but modern airport of Luanda on 26 July 1983 for a 1½ hour flight to São Tomé, passing on the runway MIG fighters, tanks and converted Aeroflot airliners. We were met off the plane at São Tomé by a UNDP driver who provided visas and the necessary paperwork to enter this small, peaceful country. But the journey to downtown was held up by a full military parade, not for us but to celebrate the President’s first visit to China together with his Ministers and selected diplomats. Quite a turnout, and an expense, for a country of 0.1 million souls! But all in a good cause; the country had a serious trade imbalance since cocoa prices had been falling, and it was expected that China would assist – an early and unnoticed step in China’s interest in Africa. After the marching had finished, we were driven to the Hotel Posada Boa Vista, an old Portuguese hotel set in the volcanic hills at 800 m, some 20 km from the capital. The contrast with Luanda could hardly be sharper – even the small downtown area was clean and devoid of the extreme poverty we had seen in Angola. No civil war here: it reminded me of the statistic that 9 of the 10 lowest-income countries in the world had recently experienced civil war or international unrest. Tanzania is the exception.

The hotel was, to us, sumptuous, with magnificent views, 20º C temperatures, and few guests – a great R and R centre (until 1975) for senior Portuguese administrators and visitors from Lisbon and beyond. Palm-fringed sandy beaches were only a half hour’s drive away, and the capital had its own charm. But we were here to work(!!), so on our first day we met the Italian UNDP Res. Rep. Jannone, his wife Marzi and his American assistant André Tanagnini. We also met our counterpart (minder) Adelino Moniz, who stayed with us for our 2 weeks in STP and became a good friend. Sometimes we had a driver (Idaleceo) and at others we were lent the UNDP jeep. Both the transport and the accommodation were excellent, although certain foods were scarce when erratic imports failed to reach the island. Although comfort is not essential, it is conducive for the work of visiting consultants and in contrast with some other places that Peter and I had worked in (esp. remote parts of Sudan, Nigeria, Brazil and Thailand).

An Outline of São Tomé and Príncipe
These volcanic islands were colonized 500 years ago by the Portuguese who brought in slaves and workers from West Africa, particularly from Cape Verde. Over the centuries, the steep land was used for plantation crops, originally sugar cane, and most recently for cocoa, some oil palm, coffee and very small patches of subsistence maize. Temperatures are 30-38º C with little variation through the year, and annual rainfall varies from 1000 mm in the NE to as much as 7000 mm in the SW. This has suited perennial crops and, apart from cocoa (which accounts for 80% of the useable land), there are banana, bread fruit, coconut and jack fruit as food crops. The oil palm area was slowly expanding at the expense of the old cocoa plantations: back in 1908, the country was reckoned to have been the largest cocoa producer in the world. When independence came in 1975, the 15 large cocoa estates (emresas of 1500-4000 ha) were nationalized, and in fact there was very little private agriculture when we visited, with only 7% of the whole economy in private hands. The emresas had been very productive but, with the disappearance of Portuguese management and some drier years, output had fallen from 10,000 tons in 1975 to about 4,000 tons. Since cocoa accounts for 90% of exports, this decline in production had serious consequences for the economy, exacerbated by falling world cocoa prices.
The livestock sector, although small, was an important protein supply, comprising pigs, goats, sheep, some poultry and a few cattle. Apart from a large central pig unit, most livestock were kept by the small private sector which also grew small plots of subsistence maize – often by the workers on the cocoa empresas. Fish was also important in the national protein diet, and artisanal fishermen comprised the largest group of private operators with around 1200 dug-out canoes, using lines and nets. Fish supplies were augmented by a small semi-industrial sector (15 boats) which mainly used lines, and, to a limited extent, by 2 trawlers, manned mainly by Cubans and fishing off the Angolan coast.

In terms of food supplies, there were several constraints which faced the country in 1983. In 1979, an outbreak of African Swine Fever led to the compulsory slaughter of all 30,000 pigs. This not only eliminated the major source of meat, but it caused exceptional offtakes of goats and cattle. This, in turn, reduced the number of breeding female goats and cattle so that, by 1983, total meat supplies were severely reduced and expensive. The fishing industry was limited by technical constraints facing the canoe fishermen and the uneconomic operation of the larger vessels – partly caused by high fuel prices and partly by the limited experience of finding productive grounds.

A second limitation on the protein supply was the dependence of the centralized livestock enterprises on feed grain which was primarily grown for human consumption. Although root crops such as taro and cassava were suitable for pigs and cattle, the cost of harvesting and transport made dependence on such tropical roots uneconomic. In addition, the working population had never been farmers apart from the small plots of maize and vegetables grown around the empresas. Furthermore, the terrain for growing cereals was mostly unsuitable for modern cultivation.

Lastly, in terms of poor food supplies, the country’s balance of payments and negative trade flows militated against large imports. Nevertheless, STP was dependent on erratic imported supplies of rice, wheat, oils, sugar and some
manufactured meat products. But the stable diet for many was bananas and fish. In short, here was a highly centralized economy almost totally dependent on falling returns from exported cocoa.

The constraints on further agricultural development were clear: an island economy in which all machinery, spares, oil etc. had to be imported; the dominance of plantation crops (mainly cocoa) and little experience of growing food crops outside of tropical roots; official preference given to large central operations; 500 years of only employed labour in a situation where most of the managers had left; and a scarcity of land suitable for annual crops.

The opportunities for agriculture were first and foremost in rehabilitating and managing the cocoa plantations to at least the production levels of 1975. This would involve specialized assistance and some training, initially provided by outside experts, but such assistance was not in IFAD’s remit. Second were the opportunities to grow a limited amount of cereals and pulses on the flatter, more fertile areas currently in forestry or left largely unused. But perhaps the most realistic opportunity was to expand the goat and cattle population, and to experiment with tropical root crops for pigs and forage for ruminants.

Last, but certainly not least, was the scope for improving protein supplies by further exploitation of STP’s fishing potential. Although the high rainfall leads to fast-flowing streams, their seasonality precludes freshwater fish production, but the country has a long coastline and a continental shelf of around 1500 km². This resource was clearly under-exploited at the time of the mission despite an apparently viable artisanal fishing fleet. The limitations here were wind and rough seas from March to May, heavy rain in October to March, and the considerable distances to unexplored waters with a canoe fleet mainly powered by sail and some unreliable outboard motors.

Field Work
In only 2 weeks, we could only visit São Tomé although Príncipe did account for two-thirds of the continental shelf suitable for pelagic fishing. Thanks to a good road system, we reached most settlements, talked to local people (through Adelina, our interpreter), toured cocoa estates and their irrigation systems, visited pig and cropping trials, and took a particular interest in the indigenous goats. We met staff from the Ministry of Agriculture and Fisheries, and most of the few expatriates who were working in São Tomé – for example George and Nancy Gunkelman (USAID) who managed the maize trials; Theresa, a Portuguese doctor; Vincente Abaca, a Chilean livestock specialist and a Polish population expert. We had our own jeep (although not always fuel), driver and interpreter, and our brilliant hotel up in the hills provided banana chips and eggs for breakfast, rice-based dinners and, if needed, picnic lunches. We were interested to see the steep valleys descending to the sea from the volcanic peak of Pico Gago Coutinho (2200 m and only 7 km from the West coast) and we explored most of the 20 or so steep roads leading inland.

Our itinerary took us to several cocoa estates – not particularly relevant except to view the small plots cultivated by the workers. Some of these had sophisticated irrigation systems with underground tunnels, and in two cases a hydro-electric scheme which powered the factory and workers’ homes. However,
in one case, the 10-year-old irrigation and power plant had been out of action for 7 years, due to poor maintenance and poor supply of spares.

We visited land clearing sites for trials of mechanised maize production, but the 1983 crop near São Tomé airport had failed due to late planting and low rainfall in May-June. A further mechanised trial of 80 ha run by USAID at Pinheira had been more successful, with yields of 2 to 3 t/ha, depending on planting dates. The parameters needed to grow modern, high-yielding cereal crops were largely unknown in this cocoa island, so agronomists were starting almost from scratch in selecting varieties, planting dates, crop protection and fertiliser use, intercrops, harvesting methods and storage. STP was not unique, but its equatorial location, unusual and erratic climate and its volcanic soils meant that it was difficult to transfer technology from other equatorial sites where there was a much longer history of maize production (e.g. Kenya, Brazil, Indonesia). Agricultural research is quite different from (say) testing machinery where the results may be immediate – in both crop and animal research the outcomes are only available annually or even longer if the researcher needs to test in different types of season. Replication of different treatments helps greatly but the permutations necessary to draw strong conclusions are many, and may need to cover several different seasons.

On a more positive note, we visited a 30-ha French-supported crop and vegetable project at the Mesquita empresa which was clearly enjoying some success. They produced maize on 16 ha which looked good in our July visit, 3 ha of beans and a trial of peanuts, cabbage, onions, tomatoes and green peppers. The project employed 50 people on its 30 ha, being partially dependent on part-time work from the empresa workers. Markets were easily found for all the produce – including the local hospital, the People’s Store and the Ministry of Commerce. It had succeeded in, at least, partly identifying the appropriate timings and technologies for its range of crops.

Other trials or projects visited included a successful small irrigation scheme at Santa Margarida growing vegetables (especially onions) and maize. The local
vegetable production manager was enthusiastic and provided us with good data on inputs, yields and income. We were encouraged at what could be achieved on a modest scale with irrigated vegetables in the drier, northern part of the island.

There were other things to see as we drove around – occasional small patches of maize and vegetables farmed by small farmers mostly Cape Verdians originally and, at the other end of the scale, large areas of forestry and agro-industrial plant such as the palm kernel extraction factory.

We visited a number of livestock development schemes in various parts of the island. In an attempt to rebuild the pig population from zero after the 1979 ASF outbreak, a new FAO-supported scheme had recently imported from the UK 150 breeding Large Whites which were now held in a state quarantine unit. The immediate and urgent problem was how to feed, fatten and slaughter the progeny when all cereals and proteins had to be imported - at $350/ton for maize alone. There was obviously a strong domestic demand for pork but I calculated the retail price necessary to cover imported feed costs for an intensive system was at least $5.00/kg – well above retail chickens at $1.7/kg, and definitely out of the range of most of the population, at least without a subsidy which could hardly be afforded at this time of government stringency. The only way a central pig breeding venture might be economic was to distribute the weaned pigs to smallholders who would feed them for pork, using root crops and human food scraps.

There were reputedly only 200 beef cattle in STP in 1983 and half of these were at a cattle breeding project which was planned to expand to 500 females by importing stock. The heifers appeared healthy but there were concerns about certain epizootic diseases, and their intensive rations obviously could not continue because of cost and erratic supplies. Peter and I made our unpopular views clear – that IFAD would not support a centralised cattle unit in view of the uncertain performance of cattle in this climate, and the advanced technical skills needed for the husbandry of the animals and the necessary forage.

Peter (the livestock specialist on our team) was much more in favour of developing goats as an economic source of meat. We had seen many healthy, well-grown goats on our travels, usually in small numbers, free-range or tethered, but apparently solely fed on a mix of natural forage. They often grazed under the canopy of cocoa or mixed forestry. Peter was pretty certain that the famous Leucaena, a leguminous perennial bush, was commonplace. This is the plant that was found and developed in the Philippines by Australian agronomists and has revolutionised the feeding of ruminants in a number of tropical situations. Here in STP, it was wild and free! But again, we were directed to a central goat project attached to the Agostinho Neto empresa: they had 170 females being fed natural forage (collected, expensively, from 600 ha) and haricot beans. But they had high mortality and problems with internal parasites especially in young kids – probably because they were in close proximity. However, milk was produced and young goats were sold both live or butchered at 3-6 months old. Later we heard details of goat production at household level from our driver's father whom we visited to see his flock of 6 goats. In a different situation, this man would have become an animal husbandry specialist instead of a contented smallholder/empresa worker. He had an encyclopaedic knowledge of goats, and Peter was keen to find the typical parameters of goat
production in this equatorial situation. He readily provided such information as: breeding rates, longevity, ages at mating and slaughter, carcass or live weights, milk production, prices, feed used and shelter required. He then repeated the exercise for sheep. His stock of goats and sheep looked extremely well – and were probably profitable at this small scale.

Our last livestock visit was to a Dutch-funded dairy project. They had imported around 80 Friesian heifers and 2 bulls in 1979, and had bred and retained female progeny for replacements. At our visit, there were 34 cows milking, producing around 300 litres daily which was quite good under these tropical conditions. They were fed tall native grasses and bought-in concentrates costing 11 dobra/kg, against a retail milk price of 25 dobra/litre – an economic price ratio in normal circumstances. But the downside was the high mortality rate: 31 had died out of 79 imported heifers in the last 4 years. Cited problems were heat stress and soft feet – conditions which rarely occur in Northern Europe. The staff were rather demoralised about the mortality but pleased with the 10 litres/cow/day milk yield. Again, we thought that supporting a centralised dairy unit was outside IFAD’s remit particularly since both disease problems were not easily solved, at least using European livestock. Cross-bred or native heifers for milk production were likely to be more suitable for the wet humid conditions in STP, but too little was known about appropriate milk production systems, and IFAD was not willing to support long-term trials.

This and other projects raise the issue of why bilateral aid so often tries to transfer the technology, breeds, and farming systems of the donor country, with too little adaptation to local market conditions? Specialist teams from bilateral agencies are not stupid; most have had considerable exposure to tropical conditions yet the donors continue to “aid” inappropriate projects (as well as some successful ones, of course). Surely, after 60 years of agricultural aid programmes, mistakes should now be rare? But even my part-time work in Africa has too often found highly unsuitable projects, especially in the livestock sector: ill-chosen breeds, foreign exchange intensive feeding systems, poor preventive medication, inadequate veterinary back-up, large centralised units (as here in STP) and minimal attention to market demands (only a small sector
of African society requires expensive beef cuts, lean pigmeat or large eggs). Can it be that bilateral aid concentrates on potential exports from the donor country?

In view of the national protein shortage and the difficulties facing the government’s livestock industry, some outside support to the artisanal fishing sector appeared to have possible benefits without depending too heavily on imports. Since there were reckoned to be only 90 motorised canoes left (mainly due to breakdowns and poor servicing facilities), an obvious way of assisting this sector was the provision of outboard motors together with a workshop, spare parts and perhaps some training on maintenance. This would increase the range, speed and safety of the artisanal fleet. Improved gill nets and lines might also be considered. Such a project might be attractive to IFAD since it supports small-scale private operators and it could have an impact on employment, nutrition and incomes. But a preliminary economic analysis was required from data obtained in the field and at FAO Rome.

Peter and I (with Adelino and Idaleco) packed a great deal into our 8 days of field work and visits, but there were times for a little relaxation. Evenings up in the hills at our hotel were delightful although even here there was work to do and people to meet. Officials liked to visit us at the Boa Vista as well as those concerned with technical assistance. Perhaps our best periods for relaxation were spent on São Tomé’s palm-fringed beaches. On one memorable Sunday afternoon (30 August), we found Praia Micolo in the extreme north east – a sandy cove surrounded by coconuts, a warm clean sea and a cooling breeze. We made a simple raft and floated a few yards from the shore before setting up a barbecue on the beach to cook a superb hot supper as the sun disappeared vertically beyond the horizon. The bustle of Rome seemed far away!

Three Selected Projects
We tried to interest our counterparts in two new projects. One was a goat multiplication scheme, modelled to an extent on the “Farm Africa” schemes in Ethiopia and Kenya. Secondly, we suggested a pilot smallholder-based scheme producing rain-fed maize and inter-planted cowpeas using family labour. If located in an area of dependable 1000-1200 mm rainfall, there might be an opportunity to take two crops per year but we needed to examine ten years of rainfall data to quantify the returns and risks. A third potential project was the provision of new outboard motors for the canoe fishermen, and an engine workshop with a stock of spare parts, and a resident engineer with some training in engine maintenance and servicing.

At the Ministry of Agriculture, the goat multiplication scheme idea was well-received, but they were less enthusiastic about the pilot smallholder rain-fed maize and cowpea project. Having satisfied the Minister that we would consider both irrigated and rainfed systems, he was better disposed to our small-scale cropping options. So, we had two contrasting possible projects in agriculture (goats and cereals), and our initial ideas on an artisanal fisheries project was met with enthusiasm in the Directorate of Fisheries.

Returning to Rome
Guided by the FAO rep, we decided to avoid Luanda on the way home and were able to get to mainland Africa by Sudene Airways which flew an 8-seater Cessna between São Tomé and Libreville – capital of the oil-rich but backward Gabon,
an ex-French colony. I still remember the superb views of the São Tomé coastline and its beaches, before heading east. Our small prop plane flew at low altitude so there were good views of small vessels in the Gulf of Guinea until, 1 hour later, the African coast came up and we descended into Libreville airport. In contrast to Luanda, the formalities were minimal and we actually walked from the small terminal building to our hotel (the Gamba) which was just outside the edge of the airfield. This was extreme French luxury – presumably home for oil workers’ families. Eating was a shock to the system – lovely French food such as shrimps and avocado for breakfast plus all the extras. Wines were served and the restaurant had a grand piano with pianist and singer in the evening. A wide sandy beach adjoined the hotel, and both Peter and I were astonished to see nude, nubile, female Francophile bodies soaking up the sunshine and occasionally taking to the tropical Atlantic waves. Could we linger here for a while? Of course not; but we did decide to fly to Marseille (there were no direct flights to Rome) and stay an extra day there – for writing our “back to office” report.

In Rome, we renewed contact with wives and families. Our back-to-office report was finished and handed over before we were heavily grilled by Volker Zaddach in the IFAD office. We survived this penetrating interview, after which, it was decided to opt for the artisanal fisheries project. This meant considerable work to sharpen up on detail at FAO, whilst still writing up the goat project and the smallholder maize project as a fall-back. But our emphasis from this point was to design and assess the economics of the fisheries project – a subject new to both of us, although we had learned much from the São Tomé experience.

Peter and I worked long hours in the IFAD and FAO offices, and in the pensione, but we did make sure that we ate comfortably in the evenings. We developed an unusual technique for finding small restaurants which proved very successful with no alimentary casualties. Around 7.30 pm we would walk down to the Viale Aventino – a dual road near the San Anselmo, catch any bus or tram, ride for between 15 to 30 minutes until we saw a small restaurant which looked attractive, alight and have our meal there. Rome has thousands of family-run restaurants and it was quite feasible to choose a different eatery each evening. In most cases we did not know the location so it was imperative to remember the route number and to identify the bus/tram stop to get home. Other distractions included a bus trip to Florence and Orvieto, and a huge carnivorous meal at the Ambassada Abruzzi ristorante – famous for its wide range of meats including African game, tiger meat and kangaroo! On the bus returning from Orvieto, we met an intensive lady from British Columbia, just back from a long stint working in an orphanage in Mogadishu in the thick of the civil unrest. I was the first person with whom she had a conversation since leaving war-torn Somalia, and her cultural shock at European opulence, security and range of food was clearly in evidence. It is through meeting people who have travelled that one has a glimpse of life outside our own comfort zones.

By Thursday August 25, the main Report and the 8 annexes were written, the whole extending to 70 pages. The drafts were discussed continuously with Volker (our IFAD supervisor) and Pat Harrison and many revisions and much editing improved the final product. By Friday (August 26) we were “wrapping up” the report and we presented a clean copy to Volker at 6.30 pm, together with some of the papers we had collected – not all, as I couldn’t have written this review
without some papers and my notes and diary. He was pleased with the report, as were the Harrisons, and especially our typist!! Peter and I had mixed feelings – it was the end of an action-packed 5 weeks which enthused us and brought us together. After a final dinner at the Ambassada Abruzzi with Bernadette, our office translator who had helped us in Rome, we returned to “home” to the San Anselmo at 3.30 am (my diary records). Next day I took an early flight to London and Aberdeen and tried to switch off STP and switch on family life. Whatever the excitement of travel and overseas work, it is always great to come home.

Peter stayed on in Rome for a few days to meet his daughter and son-in-law who had arranged a European visit to coincide with Dad’s movements. Although Peter and I wrote regularly, I did not see him until 1996 when my wife and I visited him and wife, Pam, on their fruit farm near Auckland. The exchange visit was made in 2007 when the Hildreths spent time in Scotland as part of a 3-month tour of friends in Europe. That is one of the most rewarding aspects of working overseas: having shared the challenges and spent all one’s awake time with a colleague for several weeks in a foreign situation, very strong bonds are created, and can last a lifetime.

For readers interested in more detail on the 3 projects we “identified”, please turn to the Annex of this travelogue.

**An Update (written in 2007)**

In the intervening 24 years, STP has seen a major liberalisation, with the introduction of multi-party elections (since 1990) and the privatisation of most state-run parastatals – including the cocoa estates. These are now privately-owned but production has still lagged below pre-independence levels. With low international prices for cocoa (except 2003), foreign earnings have declined, although still accounting for between 85 and 95% of all exports. Efforts to redistribute plantation land have largely failed and are part of the reason for decreased cocoa production. Maize and other cereals are insignificant so it seems that there has been no development of either large- or small-scale maize production. The state of the artisanal fishing is unknown, and there is no reference to dispersed livestock production. Some further research or a visit to the country is called for!

With declining exports and a steady rise in imports (50% from Portugal), the balance of payments has steadily worsened and the country has become heavily dependent on concessional foreign aid - from UNDP, World Bank, African Development Fund and bilateral assistance from Portugal and Taiwan. In 1987, STP implemented a Structural Adjustment Programme (SAP) under the auspices of the IMF. By 2005, government employment was reported as only 11%, compared with 93% at the time of this study (1983).

With such a small population (157,000 in 2005), the external debt per capita became one of the highest in Africa, but substantial write-offs were made by the World Bank and the African Development Fund in the early 2000s, and more recently under the IMF-WB’s Heavily Indebted Poor Countries (HIPC) facility, and by the Paris Club.
Despite a reported GNP/per capita of $1300 in 2006, it is estimated (by UNDP) that 54% of the population live below the poverty line. The exchange rate is 12,000 dobras/$ - dramatically down since my work in 1983. Other changes are the government efforts to reform the land to allow more subsistence plots adjacent to the estates, and to improve the poor employment conditions of estate workers. Tourism still appears to be a potential rather than a serious sector, despite the many attractions and recent government attempts to improve the infrastructure for visitors.

The most dramatic factor likely to effect the STP economy in the near future is oil. In 2001, STP and Nigeria agreed a joint exploration of the sub-sea volcanic range up to the Niger Delta. After lengthy negotiations, in April 2003, a Joint Development Zone was agreed, and opened up for bids by international oil companies. There are 9 blocks, the first licensed in 2004 to three major companies at a bid of $123 million to be divided 40:60, STP:Nigeria. If oil reserves match expectations, STP could become another United Arab Emirates in the Gulf of Guinea. The effect of this potentially huge windfall is difficult to forecast but it is hoped that agriculture and the rural population will not be side-lined – as has happened in the big brother Nigeria to the North. Farming and fishing (and even tourism), if well managed, can continue indefinitely; oil revenues are finite.

*Editorial Postscript 2015*: STP’s population is now about 190,000 (43% aged under 15), and the economy remains dependent on cocoa. The exchange rate is about $19000 dobras/$, and the country remains very poor. Oil exploration has started, but “actual production is at least several years off” (CIA website).
**Trouble in Store, by Drennan Watson**

Drennan will be remembered by many as a Crops Protection Specialist at NOSCA between 1965 and 1986, after which he moved into private land management consultancy practice on a national and international scale, e.g. in the wider UK, Europe and Australia. He was also active in Scottish environmental politics, being the founding chairman of the North East Mountain Trust and Scottish Environmental Link, a director of Highlands and Islands Forum, and in 2001 he was awarded the OBE for services to the environment.

There are moments in extension work when an uneasy feeling grows about a developing situation. This happened to me in the late 1960s when I became aware of what I called “The Post Harvest Crisis.” Hay baling was by then widely practised and was clearly a disaster, as much decayed in the bale. Decay was developing in stored grain. Our investigations eventually identified thirteen different problems arising from decayed feeds. Most are indicated in Figure 1 but two in particular were worrying from the start – mycotoxicosis (poisoning by fungal toxins) and allergic diseases of the respiratory tract in farmers and farm workers inhaling organic farm dusts.

These allergic conditions were of two types – Type 1 and Type 3. Type 1 reactions are often to known human allergens, such as the fungal genera *Cladisporium* and *Alternaria*, commonly called “sooty moulds” and found on cereal heads among other places. The allergic reaction is rapid, unpleasant, and disabling if severe, but the symptoms are reversible. One survey of workers on combine harvesters at harvest in East Anglia showed that 30% were developing Type 1 reactions as “harvesters’ lung.” Type 3 reactions are more worrying still. Symptoms occur hours after exposure; damage in areas such as the alveoli (small lung cavities) is remedied by development of wound tissue which is largely permanent and inelastic. Successive attacks lead to accumulation of this inelastic tissue; the lung function progressively deteriorates, and victims can, and in cases do, become respiratory cripples. In farmers, this condition is called Farmers’ Lung. In Orkney, where mouldy hay bales were a particular problem, a GP eventually showed that 10% of the entire agricultural workforce were developing farmers’ lung. These are levels of industrial injury that no other industry would tolerate!

The most worrying potential situation was mycotoxicosis. Almost regarded as a historical condition in the form of ergotism, it re-emerged in the 1930s as a mass killer when the Soviet Union, having chosen to build tanks rather than tractors, found harvesting a difficult harvest almost impossible. Fungi attacked crops which had to be consumed often when harvested from under snow, producing mycotoxins called trichothecenes. Livestock died in their thousands when they developed stachybotriotoxicosis - eight million horses in one Soviet province alone. People developed ATA disease (Alimentary Toxic Aleuka) and 100,000 are thought to have died. Later, Forgacs and Carl, reviewing mycotoxicoses, called them “the neglected diseases.” But they were not neglected for long. Through the door came “Turkey X Disease” when tens of thousands of young turkey died. It was tracked back to the feed – peanuts in which fungal decay by *Aspergillus flavus* lead to the production of the mycotoxins “aflotoxins.” These were not only highly toxic in their own right –
they proved to be highly carcinogenic, and remain among the most potent carcinogens ever discovered!

Turkey X Disease was a wake-up call about the whole situation. At meetings in London, I pointed this out, saying that, since people also ate peanuts, we must ask how many people had died undiagnosed? There was no inclination to wake up that sleeping dog! Well, we still had a responsibility to the agricultural community in our College area, and I returned to decide what to do.

The first stage was to investigate these problems on farms. What slowly emerged is outlined in the Figure outlining the sources of mouldy feeds and the main causes of the problem. It was an alarming scene. When tackling a situation like this, two things are immediately clear. Firstly, it requires a multidisciplinary approach. Agricultural engineers, vets, general advisors, plant pathologists and, where human disorders are concerned, medical consultants are among those needing to be involved in any investigations or remedial actions. Secondly, the situation could not be tackled by linear reductionist thinking that underlies hard science. To take in the whole situation required systems thinking, particularly soft systems thinking, which links mechanical processes and human interactions.

So how did we evolve this picture? Cases of decayed grain were investigated in cooperation with the agricultural engineering advisors and livestock disorders suspected as being caused by feeds in cooperation with the College veterinary services. Respiratory allergies required cooperation with medical consultants specialising in thoracic disorders. This was established with Dr James Friend and his staff at Aberdeen Royal Infirmary and, to a lesser extent, the same at Raigmore Infirmary in Inverness. The key to this cooperation was that, while the medical specialists could competently diagnose the disorders but naturally lacked experience of the farm situation and how to protect their patients there, NOSCA staff could provide this but had no medical competence or remit. The general advisers were involved case-by-case.

What emerged from all of this? Thirteen different problems were identified as arising from the decay of feeds. A study at the Central Vet Laboratories in Weybridge concluded that 20% of all bovine abortion was mycotic – that is, induced by infection by fungi, and in nearly all cases the same thermotolerant species was found in decayed hay and grain. College veterinary staff passed lesions from infected placenta and infected gut ulcers to myself. Examination of these and subsequent isolations in the lab showed that the pathogens were the same fungi – *Aspergillus fumigatus* and species of *Absidia*. It is currently thought to cause 3-10% of all bovine abortion.

Establishing the significance of mycotoxins was much more difficult. Nobody knew how many there were, or often how to detect them, what symptoms each induced, or what levels of intake were safe. A cooperative research project with the Rowett Institute established responses to different levels on intake of a mycotoxin called zearlenone, produced by species of Fusarium, and which acted like an oestrogen. But we remained uncertain about the frequency of its occurrence. We joined a UK network of agencies interested in the mycotoxin problem, and annually pooled experiences. In cooperation with private and NOSCA vets, cases of livestock disorders associated with feeds revealed some
Post-Harvest Crisis of Decayed Feeds

- Increased Inputs of NPK
- Increased Yields
- Inadequate On-Farm Storage in Old Barns etc.
- Decay of Grain
- Hay Baling !!!
- Intense Decay of Hay
- Decay of Grain
- Poor Farmer Appreciation of the Dangers of Decayed Feed
- Inadequate Processing and Drying Systems to Cope with Higher Yields
- Biologically Unsound Design of Harvesting and Storage Measures
- Unsealed “Sealed” Silos
- Widespread Lack of Appreciation of Risks from Mouldy Feeds among Agencies, Researchers, Agric. Companies, etc.
- Imports of Decayed Feedstuffs
- Advances in Nutrition and Nutritional Analysis
- Spread of Use of Compound Feeds of Unknown Content by Farmers
- Gappy Farmer Knowledge of Conservation Principles
- Lack of Good Descriptions of Conservation Principles

Increased Yields

Advances in Nutrition and Nutritional Analysis
false diagnoses, but also some horror stories and lesser disasters related to mouldy feed intake. All in all, in the light of growing knowledge of mycotoxins and our experience, our concerns grew. It was impossible to assess the situation reliably, but time had proved our concerns well founded. Today, many international agencies are trying to achieve universal standardization of regulatory limits for mycotoxins. Over 100 countries have regulations regarding mycotoxins in the feed industry, in which 13 mycotoxins or groups of mycotoxins are of concern, and an entire minor industry has evolved using mycotoxin deactivators and binding agencies. One current American estimate puts the annual losses on animal production in the USA due to mycotoxins at $1 billion!

Cooperation with medical consultants on investigating the situations of farmers and farm workers with allergic respiratory conditions was very effective. In particular, as an example, the need for a suitable kind of powered respirator was identified. People with damaged lung function cannot work and inhale sufficiently against the resistance of filters in the normal respirators. Only the Airstream Helmet was available. It was vigorously promoted, helped many patients, and prevented many others from developing these conditions. This was a very successful intervention. It was also identified that many people with Type 1 allergies were transporting enough allergen on their clothing to precipitate attacks indoors. That could be solved by wearing overalls and leaving them outside at the door.

Finally, to decide what action to take to remedy the situation, one had to decide on the basic causes of the situation. These causes were diverse, but several emerged clearly:

1. Low awareness among farmers and others of the drawbacks and potential hazards of mouldy feeds. “A bitty mould never does ony harm” was commonly said – but it did!

2. Surprisingly inadequate knowledge among farmers of the principles of sound in-store conservation. This was well demonstrated after the harvest of the long hot dry summer and harvest of 1976. Many farmers understood that the low moisture content of the incoming grain meant that no drying was needed, but not that the temperature was above the minimum required to prevent infestations by weevils, which are indifferent to moisture content. The result was an epidemic of grain weevil infestations. Scottish farmers were by no means alone in mishandling such situations. In the USA, grain in some bulk carriers loaded at too high a moisture content decayed, heated, and proceeded to spontaneous combustion. Captains knew what to do about fires onboard: they turned hoses on them, the grain swelled, and intense pressure in the holds split the hulls and sank the ships! Only after, collectively, a sizeable fleet had been thus lost over a few years, did the underlying causal confusion emerge. Biologists advising on maximum moisture contents worked on a wet weight basis, but chemists receiving the advice worked on a dry weight basis. Ah me!
Some problems of moulidy feeds

- Insect and mite infestations
- Lowered market value
- More complicated and expensive management
- Loss in nutritional value
- Mouldy grain
- Physical discomfort to worker from dust
- Respiratory allergies (e.g., Farmer's Lung) in workers and stock
- Loss in palatability
- Risk of digestive upset
- Risk of poisoning
- Risk of abortion
3. Increasing applications of nitrogen fertiliser, especially where yields had increased but storage, drying, and handling capacities had not kept pace. Problems arose like overworked augers breaking down. Large heaps of slowly decaying grain awaited drying, and/or were stored before and after drying in unsuitable premises.

4. Engineers and others designing new forms of harvesting or storage but ignoring biological constraints. Baling hay was always doomed to be rather disastrous unless measures like barn haydrying were also introduced. So-called sealed silos storing moist grain, preventing decay by exclusion of oxygen and build-up of carbon dioxide, were not in fact sealed. To avoid damage to the silo as air within expanded and contracted with varying daily temperature, a valve opening under only 2lbs per square inch pressure was installed, permitting entry of oxygen. Inevitably, problems developed within the silos.

5. Semi-decayed feeds being imported. Visits to storage facilities of these feeds before they were exported demonstrated this clearly, but importers lacked measures to exclude such material.

6. Farmers not exerting enough control over feeds that they bought onto the farm. Advances in nutritional science brought in compounded feeds which often contained up to a dozen ingredients drawn from various countries. Suppliers refused to inform farmers what was in such feeds, even when they were suspected of being the source of problems. No other industry would have tolerated this attitude from subcontractors.

7. A lack of awareness and care in quality control in the agricultural feed industry.

The question was: how to intervene to change peoples’ behaviour non-coercively? This, after all, is the essence of advisory work, as opposed to regulation. Three advisory bulletins were designed to raise awareness and improve feed conservation and protection of farm staff. Prevent Mouldy Feeds, prepared cooperatively with NOSCA’s agricultural engineers, spelled out the problems caused, how storage went wrong, and how to conserve and store correctly. Farm Dusts and Your Health, prepared through close cooperation with ARI consultants, especially Dr Friend, explained the respiratory disorders, their causes, and how to avoid them. Choosing and Using a Respirator, prepared with help from Robin Howie, a specialist in respirator design and use at the Department of Industrial Medicine at Ninewells Hospital Dundee, was a handbook on the use of respirators in farms. These bulletins were launched alongside a publicity drive that got articles into twelve agricultural magazines, broadcasts on radio and TV, talks to farmer groups, displays at agricultural shows and supporting Technical and Information Notes. Although 4000 of each bulletin were printed, they soon ran out, with requests received for more, as for example 200 of each from an agricultural college in the USA. Another 4000 were printed as demand continued. We had got something right! Papers and tuition were also delivered at the Ninewells department in postgraduate courses on Industrial Medicine and on Health in Agriculture. We were by then cooperating with three hospitals.
Was it effective? A frustrating aspect of this kind of work, done on a very limited budget and with increasing pressures on time from other commitments, is that surveys to measure changes in attitudes and behaviour are not possible. Certainly, cases of respiratory diseases seemed to decline, and the scale of demand for the information clearly indicated a strong interest among farmers and others.

This work took us to the start of the 1980s when partly in response to NOSCA’s work, the awakening hoped for in the 1960s started. A paper in the New Scientist by myself on mycotoxins, “Trouble in Store”, helped to develop interest, and was followed by two papers to the 5th Environmental Health Conference at Ninewells Hospital, one on respiratory allergies and one on mycotoxins. Interest grew, and the Poultry Advisers’ 1982 conference accepted a paper on respiratory allergies and dangers in poultry units. The Journal of Biodeterioration accepted a paper on decay of feedstuffs, including causes of decay in 52 cases of decayed grain lots. NOSCA’s Farm Buildings Investigation Unit hosted a 1986 conference on environmental health aspects of intensive pig and poultry units, and 1986 saw a major conference in Gothenberg on Health Effects of Organic Dusts in the Farm Environment. Presented therein were a joint paper with Dr Friend and his medical colleagues reviewing the causes and effectiveness of interventions in 152 cases jointly investigated on farms, and a second by myself reviewed the origins and control of such dusts on farms. That same year, the British Society of Animal Production published the proceedings of a conference on Pig Housing and the Environment with five papers by NOSCA staff including one by myself. The world had awakened!

Well, in the end, how well was it done? Not perfectly, that is for sure, and I must take much of the responsibility for the shortcomings. We should have spent more time with private vets, GPs and the feed industry for example. On the other hand, NOSCA was certainly well ahead of any comparable organisation such as advisory services in the British Isles, and was a major force in the general awakening. How was it able to respond so cooperatively and effectively to a complex situation with multiple causes, multiple hazards, multiple disciplines, multiple agencies and many stakeholders? I would give two reasons. One was that everyone knew what the College was there for – to support the farming community: that unified us and led to ready cooperation across disciplines. A second was that, despite a governing board and structure of groups, departments etc., in fact NOSCA operated almost entirely from the bottom up. Staff knew what their job was, were competent, and got stuck into it. Could SAC or its successor SRUC tackle such a complex problem?
US Agriculture and Farm Coops: Tales from the Big Country!, by Jim Booth

After the Association’s 2014 AGM, Jim Booth, Head of Co-operative Development at SAOS (the Scottish Agricultural Organisation Society Ltd.) gave a talk with the above title, and illustrated with slides, a number of which are included below, along with text summarising Jim’s remarks.

Jim started with a few facts about SAOS, which has been in existence for over 100 years, and is the Scottish rural co-op development organisation. SAOS is member-owned, and involves 65 agricultural coops throughout Scotland. The top 20 members have a combined turnover of £2.3 bn and 26,106 members, so is a significant sector. SAOS has 14 staff with their headquarters based at Rural Centre at the Ingliston showground.

In October 2013, he spent a week in the Mid-West of the United States, with a group of Brazilian co-op managers and chairmen. Like the USA, Brazil is a large and multicultural country, where farmers sometimes find it hard to borrow from banks. Compared to Brazil, the USA has much better infrastructure such as rivers, rail and road - soybeans can fetch around $40 fob in the Corn Belt but $140 in Brazil! - but Chinese investment in Brazil is changing this. In the USA, only about 10% of the 2 million farmers are full-time, but 1 in 3 acres is used for export production, though with less biodiesel production from soya as energy prices change.

Jim presented some comparative figures for Scotland and the 3 states he visited:

<table>
<thead>
<tr>
<th></th>
<th>Area (km²)</th>
<th>Population (m)</th>
<th>No. of Farmers</th>
<th>Average Farm Size (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotland</td>
<td>78,387</td>
<td>5.4</td>
<td>52,625</td>
<td>290</td>
</tr>
<tr>
<td>Nebraska</td>
<td>X 2.5</td>
<td>1.9</td>
<td>46,800</td>
<td>972</td>
</tr>
<tr>
<td>Iowa</td>
<td>X 1.9</td>
<td>3.1</td>
<td>92,300</td>
<td>333</td>
</tr>
<tr>
<td>Missouri</td>
<td>X 2.3</td>
<td>6.0</td>
<td>106,500</td>
<td>271</td>
</tr>
</tbody>
</table>

and showed some impressive figures on corn productivity (up from just over 20 bushels per acre in the 1930s to about 160 bu/acre in recent years), exports (increasingly in processed form), and net farm income
(more than doubling from the early 2000s). However, the 1980s are still remembered as a hard time for the Mid-West, with farmland values halving under the pressures of borrowing and a Russian embargo. The 2014 U.S. Farm Bill (going into effect as this article goes to print) spends mostly on food stamps, but the rest goes on crop insurance and commodity payments, with a small amount on ‘conservation’.

Farm coops in the USA are widespread, and nowadays number about 2,500, usually the result of mergers of much older co-ops. They get good support from the USDA, states and local councils, and are big business, competing with the multinationals. For example, Ag Processing Inc (AGP) operates 9 soybean plants in the Mid-West, employs approximately 1,100 people, and markets U.S. agricultural products around the world.

U.S. co-op governance usually involves contested elections of directors for 3 years, with well educated managers incentivised with bonuses, and CEOs evaluated twice a year. As an example, the Heartland Co-op, with 3,500 members, is the result of a 1987 merger of 3 much older co-ops, and supplies fuel, feed and agronomy inputs. It has 11 Directors, elected regionally, who are paid a per diem of $300, and who return 50% of the co-op profit back to members, 50% as cash and the balance as equity. It is considering forming its own ‘bank’ as expects 50% of future sales to be on credit.

The Farm Credit System (FCS) was established in 1918, and provides more than a third of the credit for rural America. It is the largest single provider of agricultural credit, under strict lending criteria, and also sells crop insurance. It is not a credit union, but raises capital from the stock market, backed by government. In Missouri, with 235 staff in 23 offices, it made a $61 million profit, returning $10 million in patronage cheques.

Jim also visited the University of Missouri, whose extension service has 84 staff throughout the state to assist some 105,000 farmers (though only 10,000 are full-time), and 23 research farms covering 100,000 acres. Over half of its budget of $90 million comes from the state.

In concluding, and in answering questions, Jim made several key points:

- **Research and Knowledge Exchange is fully supported in the USA, but productivity and innovation are lagging in Scotland, which needs to search the world for learning, and to challenge the status quo.**
- **Will Scotland go the same way as the United States, i.e. few but very large full-time farms? We need to search for younger farmers, better access to land and capital, and perhaps the possibility of share-farming, as in New Zealand.**
- **Co-ops depend upon the quality of their boards and staff; there have been co-op failures in the North –East, but this rate is less than half that of corporations.**
Craibstone Domestic Science 1932

The following has been transcribed by Jim Marr, who was sent the original documents by a visitor who had been a student at Craibstone in 1932, and a few years ago returned there for the first time since then. There are several photographs, but only the best reproductions are included here.

The North of Scotland College of Agriculture.

PROSPECTUS

CRAIBSTONE SCHOOL

of

RURAL DOMESTIC ECONOMY

Director of Studies
Prof James Hendrick BSc FIC

Resident Staff

Lady Superintendent
Miss Katharine F Boyd

Teacher of Laundry work and Cookery
Miss Jean W Ferguson

Instructress in Poultry keeping
Miss Finlay

Instructress in Dairying
Miss Wilson

Visiting Lecturers

Lecturers in Animal Husbandry etc.
W J Profeit MA BSc (Agr)
George Donald BSc (Agr)

Lecturers in Bee-keeping
John Anderson MA BSc PhD
John Andrews SEB

Lecturers in Horticulture
George E Greenhowe
J Ames

Practical Demonstrator in Animal Husbandry
A R MacDonald BSc (Agr)

Secretary and Treasurer

A A Prosser, 41½ Union Street Aberdeen
Telephone No. - Aberdeen 4046

Postal Address - Craibstone School, Bucksburn, Aberdeenshire
Telephone No. - Bucksburn 16 Railway Station – Bucksburn
There are excellent facilities at Craibstone for the carrying on of the School, and in providing instruction in these subjects. The Estate is conveniently situated about five miles from Aberdeen on the main road leading to Inverurie and the North, and little over a mile distant from Bucksburn and Bankhead Railway Stations. Buses from Aberdeen and the North pass the School at frequent intervals. The students reside in the Estate Mansion House, which has been specially adapted and furnished for the purposes of the School. The extensive and well wooded policies, affording ample scope for outdoor amusements, and the general situation of the Mansion House, make it a healthful and desirable place of residence.

The Home Farm of Craibstone, which is in the hands of the College, affords necessary facilities for instruction in the breeding, feeding and management of live stock. A small herd of dairy cows is kept for dairy purposes, and a herd of pedigree pigs for instruction in breeding and feeding.

A working dairy and a working laundry are housed in a building which has been specially fitted for these purposes, and while no elaborate machinery or apparatus have been introduced in either dairy or laundry, as it is considered that training of much more practical benefit is given by the use chiefly of appliances which may be found at the students' own homes, the arrangement and fitting up of the building have been carried out so as to ensure the best possible working conditions as regards comfort and sanitation. A Lecture Room is also provided in this building.

There are extensive poultry runs and houses, a large and well-stocked garden, and an apiary with honey homes fitted with all necessary appliances, in close proximity to the Mansion House.

The Resident Staff of the School consists of a Lady Superintendent who teaches Housewifery and Needlework, and female teachers of Laundry Work and Cookery, Dairying and Poultry-keeping. Visiting members of the College Staff give instruction in Animal Husbandry and Farm Work, Bee-keeping and Gardening. The whole of the Staff possess qualifications recognised by the Scottish Education Department.

The students are afforded the opportunity of acquiring a general knowledge of the experimental work carried on at the College Farm: and arrangements are made for occasional visits to poultry farms, dairies, and other places where useful demonstrations of interest to the students can be given.

Two complete Courses of Instruction are given each year, commencing in January and July respectively, and the fee payable by students is £35 for the course of about six months’ training. This fee is inclusive of tuition, residence, board and laundry, and is payable in advance.

Education Committees within the College area, award bursaries of suitable amount, according to circumstances, to a limited number of approved students from their respective areas to enable them to attend the course, while Education Committees in other parts of Scotland are also prepared to consider applications for bursaries by students in their own areas. Particulars regarding these may be obtained from the Clerks to the respective Education Committees.

Further particulars may be had on application to the Secretary of the North of Scotland College of Agriculture, 41½ Union Street, Aberdeen.
SYLLABUSES OF INSTRUCTION

Home-making

Home-making - What it means, its importance to the individual, the community, the nation
The Dwelling Choice, simple knowledge of Drainage
Furnishing and Decoration - Re-decoration, importance of colour, etc; care of Furniture
Modern equipment and its choice. Labour-savers, time savers etc
Importance of Plans - Arrangement of the work of a house; daily, weekly, periodical cleaning
Floors and Floor-covering - their choice and care
Cleaning agents
Setting and serving of meals: care and cleaning of china, glass, cutlery, metals
Care of clothing and footwear
Management of the linen cupboard
Management of Income Accounts, simple book-keeping, National Insurance etc
Personal and Domestic Hygiene
Home-nursing - The Sick Room, the Medicine Chest, Treatments of Common Ailments etc
Care of Infants and Young Children

Needlework

Measurements and simple drafting
Use of Patterns and how to adapt them
Use and care of Sewing Machine
Making of Underclothing and simple garments
Mending and darning of Household and Personal Linen
Making of Curtains, Cushions etc
Knitting, Darning of Stockings
Embroidery
Simple Upholstery

Cookery

Management of Kitchen - Open fire, range, gas stove; care and cleaning of utensils
Principles of Nutrition - Choice and food value of various foods
Cooking of Food Practice in various methods - boiling, stewing, roasting and baking, steaming, frying
Stock and Soup making
Vegetable Cookery and Salads. Their importance in the diet - preparation and cooking of pulses and cereals
Fish and Fish Cookery
Cheese and Cheese Cookery
Egg Cookery - Milk and Milk Puddings
Meatless Cookery - Necessity for supplying food constituents
Poultry, Rabbits, Hares - Choice, preparation, cooking
Preservation of Food - Jam making, bottling of Fruit and Vegetables; curing of Bacon
Tinned foods - their use and abuse
Arrangement of Family's Meals; necessity for mixed diets; practice in cooking complete meals with special reference to farm produce
Sick-room Cookery and Diet for Convalescents

**Laundry work**

The care and cleaning of Laundry Utensils. Storage, price, care and proper use of cleaning materials

**Poultry-keeping**

Breedes of Poultry - Classification, commercial varieties, their economic value and suitability for different localities
Selection of Stock - Making up breeding pens, building up of laying strains, trap-nesting and handling of stock
The Egg-Selection and storing for incubation. Testing eggs for fertility
Incubation - Natural and artificial methods. Advantages and disadvantages.
Management of the incubator room. Causes of faulty incubation
Rearing and feeding of chicks - Care of coops, breeders, rearing ground. Use of disinfectants
Feeding to adult stock. Economy in use of foods. Utilisation of by-products of house, farm or garden. Suitable rations. Importance of green food, shell, grit and water
Management of laying and breeding stock
Importance of cleaning, disinfection of houses and land. Common diseases
Fattening of poultry and preparing for market
Preservation of eggs
Houses and Housing: chief points to observe when building or improving existing houses
Turkeys, Ducks and Geese. Varieties and management. Costings
Costings

**Dairying**

Milking - the hygienic production and handling of milk
Milk - its composition and treatment
Production of Pure Milk - sources of taints and contamination
Dairy Utensils - their care and uses
Cream - composition, grades, regulations affecting sale
Process of butter making. Factors affecting churning, flavour, texture and keeping properties of butter
Cheese making. Principles of Cheese-making - control of milk, use of starters, Annatto, Rennet: importance of acidity, moisture and temperature.
Common errors in cheese making: causes and remedies
Ripening of Cheese - ripening room: effect of temperature
Milk Testing - sampling and testing for fat content, Gerber method
Practical Work - Milking. General work of keeping a Dairy. Separating, hand-skimming, butter making: hard, soft and cream cheese making

Animal Husbandry etc

Constituents of Foods - Building (flesh forming etc); Fuel (fattening etc); Composition of home grown and bought foods; Baying foods; Head values of foods; Maintenance Production.

Calf Rearing - National and Artificial methods. Foods - Milk. Separated Milk, etc; Milk substitutes and Cream equivalent; Housing and General Management.

Dairy Cow - Factors affecting yield and quality of Milk. Choice of foods - preparing foods; making up rations etc.


Bee-keeping

Natural history - elementary anatomy of the bee. Queen, drone and worker. Life history, swarming. The importance of the bee in developing flowers and fruit.

Various types of hives

Handling bees - stings and their treatment


Practical work - the students must make themselves familiar with seasonal work in the Apiary. Opportunities will be given of learning to handle bees, and of carrying out the various necessary operations. Each student will have practice in making up frames, rations etc. Bulletins on bee keeping, issued by the College will be supplied.

Notes - Much useful information in a very compact form will be found in "Instructions for Irish Bee Keepers" readily procurable in Aberdeen.

About 100(?) Lantern Slides on bee keeping are available, and the lantern will be freely used to illustrate the lectures.

Students who so desire will be encouraged to run and manage their own stock of bees during residence.

Students may also obtain the Beemaster's Certificate of the Scottish Bee-keepers Association during their courses.

Gardening

The Country Home-maker's Garden. Its value as a means to health and as a source of mental and spiritual refreshment; its pleasure value and its practical value to the household. The importance of dividing the available space into fruit, flower and vegetable sections. The value of shelter.

Superiority of home grown fruit, vegetables and flowers. How to maintain supplies all the year round.

The soil drainage, tillage operations, digging, double digging, and surface cultivation.
Manuring – Natural and artificial. Manuring of annual and permanent crops.

Liquid manures

Vegetable growing. Time for seed sowing and planting out, care of seedlings.

Potato, the cabbage family, Peas and Beans, Onion and leeks, Carrot, Parsnip and Beet, Celery, salad and permanent vegetable crops.


Fruit trees in small gardens. On walls and in the open, types and varieties.

Planting pruning and manuring.

Small fruits: Strawberry, Raspberry, Gooseberry and Currants.


Room and window plants in pots: care and management.

Common garden pests – Prevention and remedial measures, insecticides and fungicides, spraying and spraying appliances.

The practical work will vary according to the session – whether first or second in each year but will include lessons in tillage operations, application of manures, seed sowing, propagation of soft and hardwood plants from cuttings and layers, thinning of seedlings, planting and cultivation of common vegetables, sowing seed of and general culture of hardy annuals and biennials, pruning of fruit trees and bushes and all seasonal work in the fruit, flower and vegetable sections.

OUTFIT for STUDENTS

The following Articles of outfit are suggested for Students –

3 White aprons at about 3/- each - bought on arrival
2 White caps at about 1/- each - bought on arrival
1 Blue overall with long sleeves
1 Cap to match (for milking)
2 Dark Aprons with bibs
1 Short Tweed skirt to wear at poultry work
1 Knitted jumper
Underclothing (at least 3 of each)
1 Dressing gown
1 pair of Wellington boots
2 pairs of house shoes or leather slippers
3 pairs of black stockings to be worn with uniform
1 Laundry bag
Comb and hairbrush
Toothbrush, sponge bag etc.
A sewing apron or lap bag
Work bag or basket with sewing and darning materials

In addition two Overalls are required. These must conform to one pattern and can be procured at the school after entry at a moderate cost. All clothing to be clearly marked with initials and surname. If desired, clogs may be worn for outdoor work
John Galt: Author and Businessman

John Galt was a Scottish novelist, born in Irvine in 1779 and educated there and in Greenock. Becoming bankrupt (not for the first time) after moving to London in 1804, he subsequently met Byron on a Mediterranean tour undertaken in order to find a trade route through the Ottoman Empire. Resuming a business career by the early 1820s, he moved to Musselburgh in 1823, and launched the Canada Company in 1824, sailing twice to Canada, where he founded the city of Guelph which annually celebrates John Galt Day, and where the city of Galt, now part of Cambridge, Southern Ontario, was named after him. After falling out with the company board of directors, he was imprisoned for debt in 1829. In 1832, he founded the British American Land Company, involving another visit to Canada (with his two sons, one of whom became Sir Alexander Tilloch Galt of Montreal) in 1833. He returned to Greenock where he died in 1839.

Throughout his adult life, and especially when his commercial efforts failed, he wrote – under at least ten pseudonyms – a number of books (e.g. Sir Andrew Wylie; The Radical; Life of Lord Byron; Lawrie Todd), plays (e.g. The Appeal), poems and articles (often for Blackwood's Magazine).

Annals of the Parish – Galt’s first “theoretical history”, published in 1821 – is narrated by the Reverend Micah Balwhidder, a Presbyterian minister in the Ayrshire town of Dalmailing, and covers the years 1760 to 1810, one by one, the period of Robert Burns and the Industrial Revolution. The novel records, without any attempt at generalisation, parish events such as births, deaths and marriages, the development of local commerce (including agricultural improvements, new roads, the establishment of bookshops, dance schools and cotton mills, and smuggling: ‘cadgers by day and excisemen by night’), and the increasing effects on local life of international forces such as the American and French Revolutions, and religious controversies.

In dealing with local (and, in other books, Parliamentary) affairs, Galt has been called “the first political novelist in the English language”; the Annals introduced the term “utilitarianism” into the English language. Though his reputation is nowadays overshadowed by Sir Walter Scott, Robert Burns and James Hogg the ‘Ettrick Shepherd’, Galt’s simple format and very unromantic style has an engaging quality which deals directly with the early transformation of a rural village and its environment into an industrial town as well as the personal prejudices and objectives of a traditionalist preacher.

The selections below focus on farm-related topics, but give a flavour of the Annals. Other books, e.g. The Last of the Lairds, and Bogle Corbet, which describes the life of a colonial developer in Ontario, have the same structure but on a day-to-day basis.

1761: “The harvest was very abundant, and the meal so cheap, that it caused a great defect in my stipend, so that I was obligated to postpone the purchase of a mahogany scrutoire for my study, as I had intended. But I had not the heart to complain of this; on the contrary, I rejoiced thereat, for what made me want my scrutoire till another year, had carried blitheness into the heart of the cottar, and made the widow’s heart sing with joy; and I would have been an unnatural creature, had I not joined in the universal gladness, because plenty did abound.”
1772: “There happened to be a sack of beans in our stable, and Lady Macadam’s hens and fowls, which were not overly fed at home, through the inattention of her servants, being great stravagers [wanderers] for their meat, in passing the door, went in to pick, and the Muscovy [duck] seeing a hole in the bean-sack, dabbled out a crap full before she was disturbed. The beans swelled in the poor bird’s stomach, and her crap [crop] bellied out like the kyte [belly] of a Glasgow magistrate, until it was just a sight to be seen with its head back on its shoulders. The bairns of the clachan followed it up and down, crying, the lady’s muckle jock’s ay growing bigger, till every heart was wae for the creature. Some thought that it was affected by a sympathy, and others, that it was the natural way for such like ducks to cleck [hatch] their young. In short, we were all concerned, and my lady having a great opinion of Miss Sabrina’s skill, had a consultation with her on the case, at which Miss Sabrina advised, that what she called the Caesarian operation should be tried, which she herself performed accordingly, by opening the creature’s crap, and taking out as many beans as filled a mutchkin stoup [a quarter-pint flagon], after which she sewed it up, and the Muscovy went on its way to the waterside, and began to swim, and was as jocund as ever; insomuch, that in three days after it was quite cured of all the consequences of its surfeit.

I had at one time a notion to send an account of this to Scots Magazine, but something always came in the way to prevent me; so that it has been reserved for a place in this chronicle, being, after Mr Heckletext’s affair, the most memorable thing in our history of this year.”

1777: “In the month of October, when the corn was yet in the holms, and on the cold land by the river side, the water of Irville swelled to a great speat, from bank to brae, sweeping all before it, and roaring, in its might, like an agent of divine displeasure, sent forth to punish the inhabitants of the earth. The loss of the victual was a thing reparable, and those that suffered did not greatly complain; for, in other respects, their harvest had been plenteous; but the river, in its fury, not content with overflowing the lands, burst through the sandy hills with a raging force, and a riving asunder of the solid ground, as when the great fountains of the great deep were broken up. All in the parish were a-foot, and on the hills, some weeping and wringing their hands, not knowing what would happen, when they beheld the landmarks of the waters deserted, and the river breaking away through the country, like the warhorse set loose in his pasture, and glorifying in his might. By this change in the way and channel of the river, all the mills in our parish were left more than half a mile from dam or lade; and the farmers, through the whole winter, till the new mills were built, had to travel through a heavy road with their victual, which was a great grievance, and added not a little to the afflictions of this unhappy year, which were to me were not without a particularity, by the death of a full cousin of Mrs Balwhidder, my first wife; she was grievously burnt by looting over a candle. Her mutch, which was of the high structure then in vogue, took fire, and being fastened with corksing pins to a great toupee, it could not be got off until she had sustained a deadly injury, of which, after lingering long, she was kindly eased by her removal from trouble. This sore accident was to me a matter of deep concern and cogitation; but as it happened in Tarbolton, and no in our parish, I have only alluded to it to shew, that when my people were chastised by the hand of Providence, their pastor was not spared, but had a drop from the same vial.”
1795: “I cannot say, indeed, that there was any increase of corruption among the usual portion of my people [i.e. the farming population]; for their vocation calling them to work apart, in the purity of the free air of Heaven, they were kept uncontaminated by that seditious infection which fevered the minds of the sedentary weavers, and working like flatulence in the stomachs of the cotton-spinners, sent up into their heads a vain and diseased fume of infidel philosophy."

And in “The Last of the Lairds” (1926), one of Galt’s later novels, that was considerably altered and bowdlerised by his Edinburgh editors, there is an interesting sidelight on current farming developments in Ayrshire at that time:

"Hoots, Hoots - dinna talk sic Malthusian havers to me. The cause o' our national decay and agricultural distress, broken merchants, ravelled manufacturers, and brittle bankers come a'thegither frae another well e'e - Were sic calamities ever heard o' in this reawlm before the turnip farming cam into vogue? Answer me that? Weel do I mind that it was in the hairst o' that year, when the first park o' turnips was sawn in the shire, that the sough came through the kintra o' the Ayr bank gaun to pigs and whistles - My auntie, wha was in the laun o' the livin and has since been sleeping in Abraham's bosom wi' Sarah his wife and the rest o' the patriarchs, said, on that melancholious occasion - and she was a judicious woman - that to gar sheep and kye crunch turnips was contrary to nature, their teeth being made for garss [sic] and kailblades, and that it would be seen that the making o' turnips pastures would prove a sign o' something ... I hae noted, year by year, that her prophesy has been mair and mair coming to pass for, with the ingrowth o' turnip farming, there has aye been a corresponding smasherie among the looms and sugar hoggits. Last year, I was in a terror for what was to happen when I saw sae mony braw parks that used to be ploughed for vittle to man, saun for fodder to beasts."

"Your theory, Laird," said I, "well deserves the attention of his Majesty's Ministers, for some of them, in my opinion, have been finding similar effects, as legitimately descended from causes equally proximate. But if turnip fields were sown to corn, would the distress be abated?"

"How can ye misdoot it? - and the redundant population would be abated too - for, as they baith came in wi' the turnips, would na they gang out wi' them? - Is na that a truth o' political economy?"

Galt is also noted for his psychological insights, both about the Scottish (or at least Lowlander, or Ayrshire) people, and about individuals, long before this aspect of writing became common. In Ringan Gilhaize (1823), a long historical novel about the Covenanters, we read:

“The English are a justice-loving people, according to charter and statute; the Scotch are a wrong-resenting people, according to right and feeling: and the character of liberty among them takes its aspect from that peculiarity.”
Barriers to Farmer Adoption of Cattle EID, by Dominic Duckett

The material below has been drawn from a January 2014 SRUC Rural Briefing (RPC RB 2014/03) and supplemented with additional original research. The author is a researcher in risk at the James Hutton Institute in Aberdeen, and a research fellow in the Scottish Government’s Centre of Expertise on Animal Disease Outbreaks (EPIC). The Briefing is one of a set based on presentations given at the XXV European Society for Rural Sociology conference, Florence 2013, in a working group on ‘Biosecurity and Rural Governance’.

Introduction

A commonly held assumption is that farmers often fail to be technologically innovative because they are ‘technology-shy’. The image of a farmer as a neo-luddite, preferring antiquated approaches to forward thinking, technologically advanced modes of operation, is one that many find easy to accept. If this were true the implications would be a serious cause for concern with particular policy implications. Some technologies, such as those related to biosecurity, may help to maintain and raise the standards of animal health and welfare, and/or reduce the risks of market crises due to disease outbreaks. There may even be major public health consequences stemming from zoonotic disease such as Bovine Spongiform Encephalopathy (BSE or Mad Cow Disease) or Highly Pathogenic Avian Influenza (HPAI or Bird Flu).

One particular technology related to biosecurity is livestock Electronic Identification or EID. This technology enables virtually real-time livestock movement traceability utilising transponders attached to individual animals (for example in ear tags). The transponders provide information to a national database about on and off farm movements and other movements through critical control points (for example livestock auctions). Some of this movement information is already captured through paper-based systems and manually readable tags, for example through the Cattle Traceability System (CTS) in the UK, but EID offers more up-to-date information which would enable more timely interventions in the event of a disease outbreak. To use an agricultural metaphor, ‘shut the stable door before the horse has bolted’.

The research reported in this Briefing challenges the characterisation that farmers are technology shy. It explores why Orkney and Aberdeenshire cattle farmers have been generally unenthusiastic about voluntary adoption of cattle electronic identification (EID) as a strategic disease control technology for the national herd and offers an alternative explanation to the notion that the lack of enthusiasm stems from a ‘technology-shyness’ trait in farmers. The research finds that farmers are, in many instances, already enmeshed in a complex socio-technical web requiring them to provide a range of information, increasingly through digital channels, and that the adoption of voluntary cattle EID schemes is seen as an additional burden rather than improvement on current practices. Furthermore, while farmers are unenthusiastic about cattle EID, they are often voluntary adopters of other technology platforms both work related and recreational.
Methods
Semi-structured qualitative interviews investigating the adoption of disease control technology were conducted with cattle farmers in Orkney and Aberdeenshire throughout 2013. In total 14 interviews and one focus group were held (6 interviews plus 1 focus group in Orkney and 8 interviews in Aberdeenshire). These two regions were chosen because they are strategically important for the Scottish beef industry comprising significant concentrations of breeding and finishing elements of the supply chain respectively. Farmers were asked about their individual adoption of digital and other technological devices comprising both general consumer digital electronics and satellite navigation devices.

Information was also elicited regarding use of the internet including information browsing, social networking and use of email. Other questions aimed to reveal attitudes to adoption of specific disease-control technologies including cattle EID. The questions were designed to establish whether the farmers were generally ‘technology-shy’, in terms of their revealed attitudes to digital technology and the internet, or if they suggested other reasons for not adopting cattle EID.

Key findings
There is little evidence for the generalisation that Scotland’s North East farmers are ‘technology-shy’, either culturally or because of ageing; indeed, there is evidence of enthusiasm for technological innovation on farms. The interviewed farmers reported a variety of digital technology and other devices on their farms e.g. mobile phones, computers, and satellite navigation systems. Smart phones seem particularly important to farmers who thought them well suited to their extensive workplaces and there were positive attitudes to smart phone apps.

One of the reasons for poor uptake of cattle EID seemed more aligned to some technology being perceived as an increasing burden rather than due to general technology shyness. Livestock farmers described involvement in an increasing series of information flows, having to supply data of different kinds to a range of external agencies, both to comply with statutory requirements and as a result of
market pressures (see figure). Managing information flows, in some cases, is not only a substantial administrative burden for farmers but time and money need to be invested in operating the systems from training costs to equipment purchases.

The farmers interviewed did not generally associate cattle EID with beneficial economic returns or labour-saving opportunities. When asked why movement recording was important many respondents first thoughts concerned compliance and cross compliance. Some background research showed that messages promoting direct farmer benefits from cattle EID adoption, in terms of profit through healthier stock or reduced record management, are not always prominent in Scottish Government information to livestock keepers. We analysed in particular the Scottish Governments’ booklets to farmers concerning sheep keeping (http://www.scotland.gov.uk/Resource/0043/00433374.pdf) and pig keeping (http://www.scotland.gov.uk/Resource/Doc/361705/0122317.pdf) and found that the prominent messages addressed compliance with little reference to epidemiological objectives which farmers might support. These booklets are focused on providing information on what farmers need to do concerning the regulations and that is a perfectly justifiable objective but if this is the only information the farmer looks at he or she will not learn about the intended benefits of compliance.

Prominent amongst the factors that appear to inform farmers about the efficacy of the socio-technical system that comprises EID is their assessment of the efficacy of the sheep EID system that became an EU obligation from 31 December 2009. Many of the cattle farmers were also sheep keepers and had direct experience of the cross compliance required under EU law including the mandatory electronic tagging of sheep. That system has come in for considerable criticism culminating in a campaign for amendments to the current regulations that was rejected by the EU in 2014. Dissatisfaction with the sheep EID regulations have been widely reported in the farming press and those cattle farmers without sheep often shared the sheep keepers’ misgivings as evidenced through anecdotal accounts that were generally unfavourable regarding the
operation of the sheep scheme. A repeated complaint represented the governance of the scheme being ‘more stick than carrot’, by which farmers suggested that there were penalties for failing to comply without corresponding incentives to comply successfully.

Further stakeholder interviews, including some with representatives of ScotEID (http://www.scoteid.com), who are the organisation tasked with administrating the database of livestock movement data for sheep and pigs in Scotland, were used to explore the information challenges facing both cattle farmers and sheep farmers in terms of the variety of digital information that livestock keepers are required to gather. The overall impression created was that EID movement recording amounted to an additional burden on farmers who were already involved in a complex socio-technical system of information provision. The following diagram represents a simplified schematic of the information flows, which many sheep farmers need to maintain including the mandatory EID scheme.

**Current demands on farmers in Scotland to provide sheep data**

![Diagram showing information flows](image)

Notes: IACS = Integrated Administration and Control System / RPID = Rural Payments and Inspections Division / Scot EID = Scotland’s Electronic Identification Livestock Traceability Research / ETAS = Ear Tag Allocation System / FCI = Food chain information / CTS = Cattle tracing system / BCMS = British Cattle Movement Service / BVD = Bovine Viral Diarrhoea
The influence of the mandatory EID sheep scheme on the voluntary cattle EID scheme appeared to be far ranging. Several farmers suggested that the likelihood that the cattle scheme would also become mandatory deterred them from making an investment in something that might not be compliant. This fear that the current technology is not ‘future-proof’ and will quickly become obsolete has been labelled ‘the Betamax effect’ (a reference to a video technology that was quickly superseded by a rival platform (VHS), leaving early adopters with obsolete equipment).

Measures could be taken to ‘future-proof’ current farmer investment decisions, in order to reassure them that early adoption will not be a wasted investment. For example, transponders may be active or passive. Regulators could help would-be investors by committing to support either or both platforms. Alternatively, early adopters could be compensated in the event of a change to the schemes required technology components.

Summary of Key Findings
- There is little evidence for the generalisation that Scotland’s North East farmers are ‘technology-shy’, indeed, there is evidence of enthusiasm for technological innovation on farms.
- Livestock farmers are already involved in an increasing series of information flows which they often perceive as an administrative burden.
- Messages promoting direct farmer benefits from cattle EID adoption are not always prominent in Scottish Government information to livestock keepers.
- The unpopularity of the mandatory sheep EID scheme appears to deter voluntary adoption of the cattle EID scheme.
- Some insurance against technology obsolescence would encourage voluntary adoption particularly where mandatory schemes are likely to follow.
- The belief that current technology is not ‘future-proof’ can deter farmers from making investments.

Conclusions
Requirements placed on farmers to manage increasing information flows constitute a significant shift in farmer power from autonomy to compulsion, with farmers held accountable for information, often at the risk of financial penalties for failures to maintain accurate systems. Farmers expressed negative feelings towards the increasing number of reporting tasks they were facing. While this direction of travel toward an increasingly regulated system is likely to continue,
additional efforts to encourage farmers to participate more enthusiastically in EID could be made. Recognising farmers as innovators and technology users is the first step. The next is to consider additional systems for traceability within the context of the systems that already exist rather than adding additional layers of complexity on top of existing burdens. For example, cattle movements are already recorded and reported by farmers. If a cattle EID system could be shown to reduce the existing burden and deliver better epidemiological outcomes, farmers would be more likely to be enthusiastic. If new requirements could be consolidated with one of the existing reporting systems this would be even better. Few sheep keepers seemed to think that these goals had been achieved with the current sheep EID scheme. Finally, messages concerning new initiatives for farmers to adopt new practices should convey prominent information about the positive benefits to the farmer including both animal health improvements and any likely labour saving or increased profitability to the farm.

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“The Rise of the Tractor” and Other Items

In the 2014 edition of the Scottish Government’s publication Economic Report on Scottish Agriculture, an Annex article with the above title summarises a “short note” on farm machinery statistics from Scottish Agricultural Economics vol. III (1952). That year was to be last in which the number of work horses in Scottish agriculture, at 43,710, exceeded the number of tractors (wheeled and track-laying) at 42,030 (the 2013 figure for tractors on main farm holdings is about 40,000). The tractor had “not been universally accepted”: while about 23,000 full-time farms had at least one tractor, 7,500 such farms had no such machine. Nevertheless, the author (G. F. Hendry, M.A.) estimated that tractors supplied nearly four-fifths of the power on Scottish farms, and that, “with the addition of 25,000 tractors in ten years [i.e. since 1942] this phase of mechanisation had been substantially completed.”

Volume I (1950) records that, at the time of survey in September 1948, 67.6% of farmhouses and crofts in Scotland had a piped water supply (20.6% public, 47.0% private) and 22.9% a supply of electricity (15.7% public, 7.2% private). On Highland crofts (farms under 30 acres), the figures for water and electricity were only 23.5% and 5.3% respectively, and only about 10% had hot and cold water available at a sink or bath. All-farm figures for other Scottish regions were much higher, though the North-East lagged behind. Volume II notes that the average Scottish dairy herd was about twice as large as that in England and Wales, and the typical commercial dairy cow yielded 500-750 gallons [2275-3410 litres] of milk annually. About half of all farmland transactions in Scotland involved a change from a landlord-tenant to owner-occupation relationship.

The above publications can be found at http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/Publications/histagstats.
Elphinstone Stones

Those readers who remember spending many hours poring over examination papers – or examinees! - in Elphinstone Hall in King’s College may not realise that the sandstone used for the building was not originally quarried and shaped for the Hall, but came from Castle Newe in Strathdon, when it was demolished in 1927. A little research has revealed the following:

The “stately castellated house” of Castle Newe was designed by the famous Aberdeen architect Archibald Simpson for Sir Charles Forbes Bart. (the first of several), as a “Mansion House”, incorporating an older building. Simpson was responsible for much of the city’s major buildings, including the Music Hall, St. Andrew’s Cathedral, the Athenaeum and Marischal College – which has recently been cleaned as the city offices and looks most impressive, especially now that the ugly St. Nicholas House directly opposite has been demolished – though it is about to be replaced by something modern, unfortunately.

Castle Newe was built in 1831 of reddish Kildrummy freestone, in a Jacobean baroque style, with mouldings of “delicate and ethereal detail”, and charming curvilinear decorated window pediments and round towers and turrets bearing the tall ogee helmets or pointed domes which are virtually a Simpson patent. In some ways, it served as a model for Balmoral (designed in 1853 by another Aberdeen architect, William Smith, though modified by that polymath Prince Albert). Both were to be grand(er) houses situated a little way from a major river, beneath a noble hill (Ben Newe and Lochnagar respectively), and surrounded by lawns and majestic trees. Both presented the problem of a public thoroughfare between the house and river: the Prince got the route to Braemar diverted to the north of the Dee by having a bridge (recently repaired) built at Crathie, while Sir Charles had a mile or two of the Donside road moved to the south of the river by building bridges at Buchaam Farm at the east end of the Castle grounds and another at the west.

Charles Forbes was the nephew of John Forbes of Newe (or New as it was known before the castle was built: the “e” was added later to discourage postal misdirections to Newcastle in the north of England) or "Bombay Jock", the founder of the Indian merchant-banking firm of Forbes & Co. Bombay, and a descendant of a collateral line of the Forbes of Pitsligo who had built the old House of New in 1604. Returning to Scotland with a fortune, Bombay Jock is reported to have “done great things to promote industry in the country by agricultural improvements, plantations and other operations and opened a communication between the higher and lower districts which bids fair for commerce and civilization in all its branches.” In addition to making a gift of £10,000 to build a lunatic asylum at Aberdeen, Bombay Jock entailed the estate of New and Bellabeg on Charles and bequeathed him funds for the specific purpose of enlarging the family home.

The Strathdon minister wrote in 1838, “of the vast improvement of the country by reclaiming and planting of waste lands, the draining and enclosure of fields, … the opening up of the Strath by a turnpike road through the centre of the parish and the formation of good cross-roads with stone bridges over the different river crossings. Also the elegant and commodious residences of the proprietors and
the comfortable slated dwelling houses and the substantial farm offices of the tenantry.”

and in 1881, judging by the account of a Mr J G Phillips who walked over the Ladder Hills from Glen Livet to Strathdon, and found Castle Newe “one of the most superb edifices I ever saw”. Forbestown, a couple of miles west of Newe, was “a beautiful and picturesque little hamlet, composed of nice little cottages, built in the English fashion, with projecting roofs. They are built on the left side, and are all new. Each cottage has its trim little garden, sloping gently down to the highway, rich with flowers and vegetables. Sir Charles must have the interest of his tenantry thoroughly at heart, for the fact of his having built all these beautiful cottages for the poor people, and granted many other privileges besides, places this beyond dispute, "for facts are chieis that winna' ding." The people appear to be happy and contented, and poverty seems to be an unknown guest among them." However, at a time of agricultural depression, this state of affairs seems to have depended on a benevolent aristocracy, for “the Glen [of Buchat, or Bucket] was very uninteresting. The principal objects that attracted the eye were the large hill of Craignsore and the utter failure of all kinds of crop. We could not do otherwise than sympathise with our Glenbucket friends, for bad as everything was looking in Glenlivet, it was, if possible, even worse in Glenbucket. But the Earl of Fife is a good landlord, and we doubt not but he will come to the rescue.”

In the 1791 Statistical Account, the Rev. John Gordon wrote about Agriculture in Strathdon as follows:

“The ordinary crops are bear [or bere, an early form of barley] and oats, some rye, with a mixture of oats, and a few pease. When the weather will permit, (which has not been the case for some years past), the feed-time is begun about the 20th of March, and finished about Whitsunday. Harvest is begun towards the end of August, and is generally over by the middle of October. In the upper parts of the parish, the seasons, both for sewing and reaping, are rather later, on account of the difference both of soil and climate. There, the ground is more chilled by the longer continuance of snow in the spring, and by more frequent showers in summer. The tenants in those parts, however, endeavour to obviate these local disadvantages, by sewing their bear immediately after their oats, without any interval; and by using a species of oats, called birley. This grain, (which is also white), is distinguished from the common white oats, in its appearance, chiefly by its shortness: It does not produce quite so good meal, nor so much fodder; neither is it so hardy in bearing stress of weather; it has also a greater tendency to impoverish the ground; but it is considerably earlier, and ripens nearly as fast in the higher parts of the country, as the common white oats does farmer down, where both the soil and climate are more favourable.

Besides the above crops of grain, a good many potatoes are raised. Turnips are generally sewn by the proprietors, and answer well. They also lay out their fields with artificial grasses, from which excellent crops are produced, both for hay and pasture. The tenants are not insensible of the advantages of cleaning and meliorating their fields by green crops, but are prevented from trying it by their inability to lay out the necessary expense, by the want of enclosures, and of long leases. Another bar on improvements in farming, is a number of services which the tenants are obliged to perform to the proprietors, such as casting, winning,
and leading their peats and turfs in summer; harrowing in feed-time; reaping in harvest; long carriages from Aberdeen and other places. Some of the heritors indeed have converted these services into money, but others still exact them in kind; and even where they are converted, the rents are thereby so much raised, that the cure is almost as bad as the disease. Of course, the mode of farming has undergone little variation here, except among the gentlemen; excepting on some farms where there is outfield, the tenants generally go over all their arable land with dung once in three years. In many places, especially in the upper parts of the parish, dung is laid on the furrow for bear, and harrowed in with the feed. In other parts, it is laid on the white land, either in autumn, or early in the spring, and covered with a break-furrow; and after lying some time in this state, is clean ploughed for the feed: This is followed by two succeeding crops of oats; after which, the ground is dunged again, and the same rotation of crops observed as before, and thus, the greatest part of the arable land here has been treated, time immemorial, without rest, or any other cleaning, than throwing off some of the weeds raised by the harrow in a dry season. Very good crops, however, both of bear and oats, are raised in this way.

Few of the estates or farms here have been measured, excepting on some of the largest farms where there is outfield ground. The tenants in general pay nearly at the rate of L1 Sterling for every boll’s sewing of arable land they possess; and as the soil is generally thin, and not in great order, it is believed that a Scotch acre will require almost a boll of oats for feed. Along with this, however, every tenant has some meadow-ground for grass, and a right of pasturage in the adjacent hills or glens. Though the land in general is little improved, the rents have been doubled, and in some places tripled within these 40 years past. This circumstance, together with the great advance in the wages of servants, makes the situation of our farmers rather uncomfortable. Accordingly, the tenantry in general are supposed to be much poorer than they were 30 or 40 years ago. At that time, many of the tenants had a full stocking or cover on their possessions, besides some money out at interest. Now there are very few of that description, but on the contrary, many of them in arrears to their landlords. The tenantry at Corgarff, (a district in the upper part of the parish, about 8 or 9 English miles in length), are rather in a more thriving condition, and pay their rents more punctually than the generality of those who live in the other parts of the parish.

Their possessions are as highly rented in proportion to the arable land on them, but they have more extensive pasturages They depend wholly on cattle for the payment of their rents, and for procuring those necessaries which their farms do not produce, so that they can the more easily bear a bad crop now and then; and as cattle have sold high for some years past, they have suffered less from the late unfavourable seasons, that the farmers in the lower parts of the country, who depend partly on cattle, and partly on victual. Their possessions too are mostly small, and they require fewer servants.

The farms throughout the whole parish in general are not extensive, renting for the most part from L5 to L20 Sterling. A few, however, are rented higher; two or three from L40 to L60 Sterling; and one farmed by the proprietor, that would fetch about the same rent. In good years, the parish produces more victual than is sufficient to supply the inhabitants, and affords a considerable surplus of butter, cheese, black cattle and sheep. The butter and cheese are generally
carried to market at Tarland, a village of about 9 English miles from the kirk of Strathdon. The cattle are sold to Aberdeen butchers, or South country drovers.

Forty years ago, there was scarcely a cart in the parish. Creels only were used for carrying both dung and peats. This practice is still continued by almost all the tenants above the kirk, where two thirds of the parish, as to extent, are situated: In the lower parts of it, however, there are now upwards of 50 carts. One of the gentlemen keeps a carriage. In the whole parish, there are about 170 ploughs; some of them are drawn by 8, some by 10, and some by 12 cattle; some by cattle and horses before them, and a great many by horses alone. The gentlemen put generally 2 horses only in a plough, without a driver. All the tenants in Corgarff, and some in other parts of the parish, yoke 4 horses abreast. The driver, who holds the halters in his hand, to regulate their motions, walks before the horses after his back. In the parish, are 552 horses, 2286 black cattle, and 8543 sheep, mostly what are called here half-brooked. The other quadrupeds, and the birds, both native and migratory, are such as are common in Aberdeenshire.”

Fifty years later, things had looked up, as reported the NSA for 1843 (Vol. 12, pp. 551, 552):

“Within the last twenty years, very great and rapid progress has been made in agricultural improvement. By trenching, and drainage etc., many of the tenants have made considerable additions of the arable land of their farms. The facility in the command of lime is of material benefit in this respect.”

The Forbes at Newe were visited – after a wrong turning and an over-boiling car radiator at Stonehaven – by the novelist Evelyn Waugh in 1926. In his diary, he recorded the trip, as acidly as usual:

“They are living in what used to be their laundry*. It makes rather a delightful little house - absurdly baronial, carpeted and curtained in tartan, and hung with arms. We left Mrs G. to stay with a negro doctor called Howie** and came to this public house - the Newe Arms [now the Colquhonnie House Hotel ] - which is much nicer than everyone told us it would be. Sir Charles is a futile little man who feels ill a lot and seems just the sort of person one would expect to lose his inheritance. He invents three-cornered loudspeakers and an apparatus for striking matches. Lady Forbes is dull and has a sister who is stone deaf. The Forbes girls are nicer than I thought them in London. After luncheon we carried enormous stones about and they took us down to see the castle, the garden entirely run to seed in two years, the house vastly dismal. We went to the top of the tower and walked down some echoing passages and came out rather chilled.”

A few days later, the party attended the Lonach Games***: “About a dozen Highlanders did march from the Lonach village Hall to the Bellabeg paddock, all of them I should say over fifty and most of them over eighty years of age. They trailed spears behind them and shuffled along in a sad sort of way. All the young men who have not emigrated to America or to the towns think it smarter to wear ill-fitting serge suits than the kilt. The games lasted a long time. There was a lot of piping and some dancing, notably by a lot of detestable children covered in medals. … We dined with the Forbes and went afterwards to the Lonach Ball where I danced some of the dances I had learned. It was terribly hot. Mrs. F. W. lay swathed in tartan on a chaise longue with an enormous man called Lumsden
of Balmedie to carry her about. She had sprained her ankle in doing Charleston on the tennis court.”

* Now the House of Newe, where members of the Forbes family still live.
** As a baby, Dr Howie had been found abandoned in a desert beyond the Jordan after a Bedouin tribal battle; he was saved and adopted by Scottish missionaries who named him Howie after his native tribe, the Howeitat; his first and only language was broad Scots.
*** Sir Charles Forbes did much to promote local traditions, primarily through the Lonach Highland and Friendly Society, formed in 1823, with the principal aims “the preservation of Highland Dress and the Gaelic language; to support loyal, peaceable manly conduct and the promotion of social and benevolent feelings among the inhabitants of this district.”

Much of the material for this article has been derived from the Glenbuchat Archive Library available at www.glenbuchatheritage.com, particularly its “pictures” (and articles) 433, 640, 670 and 868.

University Court Minutes for the 1920s contain the following entries:

June 23rd 1925, Page 214: Architects for Elphinstone Hall named as Messrs. A. Marshall Mackenzie and Son

July 14th 1925, page 226: ‘Forwarding a letter from the Aberdeen Association of University Teachers respectfully urging that the University Court in considering the plans for the New Buildings at Old Aberdeen should arrange for the provision of a suitable Staff Room with the necessary lavatory accommodation.’

July 29th 1927, page 491: ‘Recommending that stone from Castle Newe which is being broken up, should be used for the King’s College extensions in place of the stone from Rhynie as originally specified, and intimating that the stone of which Castle Newe is built was originally taken from the Kildrummy Quarries.’

November 8th 1927: ‘Communications were received from the Edilis Committee as under: 1(a) In answer to the remit of 1st September, 1927, intimating that in view of the difficulty of obtaining suitable wood for an open roof, the Committee is of opinion that no alterations should be made in the existing plan for the roof.’

March 13th 1928, page 566: ‘In answer to the remit of 14th February, anent the roof of the new Examination Hall, intimating that the cost of a timber roof would be £1356, and the cost of an iron truss roof £697 4s. 9d. The cost of a wooden truss would thus exceed that of an iron truss roof by £658 15s. 3d.

Remitted to the Principal and Dr. Crombie to ascertain from the family of the late Mr. Adam whether they would approve of part of the money gifted by Mrs. Adam to the University for the purposes of improving the amenity of King’s College being applied towards the cost of obtaining a wooden
roof, and resolved that in the event of the Adam family being agreeable, a wooden truss roof be erected, and £650 be taken from the Adam Fund for this purpose.’

April 4th 1928: ‘In answer to the remit of 13th March, 1928, Dr. Crombie reported that the Principal and he had seen Mr. Adam, who was delighted that part of his mother’s gift should be devoted to the erection of a wooden roof on the Examination Hall, King’s College.’

University Library Special Collection files also contain an inventory (MSU 738) of the furniture of the Hall, e.g.: 40 examination tables were ordered, at 15/- each. File MSU 1494 contains a number of utility plans, the majority fairly functional but with some external drawings.

The Hall was opened in 1931, the 500-year anniversary of Bishop Elphinstone (1431-1514), and was used for student dances as well as examinations and other events: SRC records in 1937 contain “Suggestions for dealing with offenders against regulations in force at University Dances”, and “Regulations governing the use of the Mitchell Hall and Picture Gallery [at Marischal College] and Elphinstone Hall by student societies”.

During the Second World War, arrangements were made for the Hall to be used as an Emergency Hospital, but were never put into effect. However, beds were installed for wartime firewatchers. According to a recorded interview (also in Special Collections) with Mr James Kelman, the long-term University Buildings Officer and Factor, when the basement under the Hall was being excavated for a stack room during the 1960s, it was discovered that the water table rose and fell with the tides!

The lawn in front of Elphinstone Hall was previously occupied by the Divinity Manse. There are a number of published photographs, including one in Jennifer Carter’s publication ‘Crown and Gown’. The building has a very gothic look to it.
ABERDEEN ACADEMIA

Caroline Daniel, AAGA Treasurer

I was fortunate to be born and brought up on a small mixed farm in North Yorkshire, nestled between the North York Moors and the coast, about 10 miles north of Whitby. The dairy operation was always at the heart of the business, but we fattened cattle, bred sheep, and grew seed and ware potatoes as well as a variety of arable and forage crops. Those days are long gone, and my brother now farms in partnership with his wife and son, specialising in dairy. Although they’ve invested heavily in upgrading the dairy facilities over recent years, they’re still struggling to see worthwhile returns.

Young Farmers and the Pony Club featured heavily in my teenage years, and school was a bit of a nuisance as it involved taking 3 separate buses to get all the way to Redcar to attend Cleveland Grammar School. When I left, my plan had been to do a farm secretarial course and then set up on my own as a mobile farm secretary, as at that time I didn’t know anyone that had been to University. However, once I got my A level results, someone suggested to Mum that I ought to go to University, so as Newcastle was the nearest, she phoned up, and there were only places left on the Agricultural Economics or Agricultural Marketing courses. We hadn’t heard of Agricultural Marketing, or really any kind of marketing, so Agricultural Economics it was. I had a very happy 3 years in Newcastle and made some good friends who I still keep in touch with. Once it came time to look for jobs, I was strongly encouraged by some of my tutors to apply for a job as a lecturer at NOSCA: I can’t really remember if Ken Thomson was involved (and neither can he!), but I suspect so!

My plan was to work in Aberdeen for a couple of years and then move back nearer home, but somehow it never happened. I was fortunate to have Dr Graham Dalton as Head of Division, and he was very keen for his young graduates to get a range of experience of teaching, research and advisory work. I wasn’t really inspired by the research, and found the teaching of OND students at Craibstone scary, especially as I wasn’t much older than them, but found my niche when I was taken under the wing of Brian Pack. This was back in the days of the Financial Calculator which was used extensively for farm advisory work.
and was offered as a service to farmers, usually after they’d attended an excellent 4 day course at Douneside House, Tarland.

After Brian moved to become MD of Mackie’s Farms, I was offered the opportunity to become Customer Service Manager for Farmdata, of which he was also MD. This was at the time when PCs were becoming available, so they’d secured venture capital funding for a major expansion from the existing bespoke agricultural software business, to on-farm standard agricultural packages. It was a very busy time with lots of travelling throughout the UK, training customers throughout the UK to use their computers and Farmdata software. This was a great opportunity to see a wide variety of farm businesses.

A couple of years later, I had a career break to bring up our three children, but managed to fit in a variety of part-time freelance work. This included work with Aberdeen University with final year BSc Agriculture students, a project for the Kintail Land Research Foundation into conversion to organic production methods, a study into the economics of potato production, and a study of agricultural capital grant and diversification schemes. I also worked with MLURI (for SEERAD) on an investigation into the designation of the Ythan as a Nitrate Vulnerable Zone, and on a study of the Environmentally Sensitive Area Scheme.

Once the children were older, I went back to part-time employment with Marie Curie Cancer Care as a Community Fundraising Co-ordinator, which seemed appropriate as Dad had sadly died of lung cancer in 1999. Although he didn’t use a Marie Curie nurse (Mum did a brilliant job of looking after him), he had the offer of one, and they really do provide excellent support in helping people stay at home, which is where most folk want to be rather than in hospital.

Eventually, the perfect job for me at Craibstone was advertised in the P&J, and I spent ages working on my application and 10-minute presentation, which obviously paid off, as to my surprise I was offered the job as a lecturer in Rural Business Management. So although I hadn’t enjoyed teaching as a new graduate, I now find it very rewarding, though not without its challenges. That was back in 2005. Since then, I’ve been on the Scottish Executive’s External Panel for EU Agricultural Subsidy Appeals, acted as Treasurer for several local organisations (now including the AAGA!), taken a MA in Higher Education Learning and Teaching at RGU, and produced a number of academic papers.

Last year, I was fortunate enough to be offered the position of Agriculture Programme Leader at SRUC Craibstone, which gives me the best of both worlds as I get the chance to be more involved in the agriculture side of things, whilst still keeping my teaching on the business side of things. My new post keeps me very busy, and we’re currently working on developing a part-time, online distance-learning MSc in Agricultural Professional Practice. So anyone reading this who is looking to add to their qualifications, or who might be interested in individual modules as part of their CPD, please don’t hesitate to get in touch!

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caroline.daniel@sruc.ac.uk or tel. 01224 711083
**Inaugural Items: Christine Watson, Alastair Stott, Tony Edwards**

In 2014, several Inaugural Lectures were given by newly appointed SRUC professors, two at Aberdeen, and one at Edinburgh by an ex-Aberdeen staff member. By kind permission of the authors, these are summarized below.

**Christine Watson**’s Lecture was entitled “*From Roots to Rotations: Exploring Nutrient Management at Different Scales*”. Though brought up as a ‘city kid’ on Tyne and Wear, Christine had great-grandparents in County Durham who were farmers and miners. She went to the University of Reading where she gained a BSc degree in Soil Science with Agriculture. This included a sandwich year at the AFRC Letcombe Laboratory in Oxfordshire where she studied gaseous N emissions from soil – though as a fertiliser and not as now a GHG! From there, she went to Wales to research organic farming using agro-ecological principles and a systems approach. This period also initiated her long-term interest in education, research and policy – and a smattering of Welsh! She later spent 10 years on the UK Advisory Committee on Organic Standards.

In 1989, she moved to the Macaulay Land Use Research Institute, and to SAC in 1990, gaining her PhD (nitrogen budgets in pluri-compartmental systems) from the University of Aberdeen, and then became a temporary Specialist Advisor on Organic Crops. Working under Prof. David Atkinson, she investigated the ‘underground story’ of plant roots using a mini-rhizotron camera system, in particular the root longevity of white clover and ryegrass in Italy and the UK. On the organic rotations at Craibstone’s Tulloch Farm, it was found that yields were maintained, with nitrous oxide emissions affected by many factors, including cultivations and timing, cropping sequence, residue management, nutrient additions, crop variety, soil type and (in particular) weather. With Sandra Edwards, Christine found that much N was lost to the environment during outdoor pig production!

A nutrient budget methodology was developed, applicable both to N and to micronutrients, e.g. copper on organic farms in NE Scotland. The relationship between N input and N surplus for organic dairy farms was of special interest. This became part of EU-wide research, where large amounts of N were estimated to be fixed by various crops, e.g. grain legumes with 206 thousand t (Gg) and forage legumes (586 Gg).

According to Christine, what does the future hold? It will be necessary to fit new pieces into the ‘roots to rotations’ jigsaw by exploring soil/crop/livestock interactions, and more generally to put Science into Practice by integrating experimental and modelling approaches, using long-term trials to answer short- and long-term questions. There is an art to broadening thinking and improving knowledge exchange in an international context. She ended her lecture with a quotation from Rachel Carson: “*Those who dwell, as scientists or laymen, among*
the beauties and mysteries of the earth are never alone or weary of life” (The Sense of Wonder, 1965).

In his Lecture, ‘Reconnecting Science with Agriculture’, Alistair Stott, whom many AAGA members will remember from his days at Aberdeen, outlined his career since graduating from the Universities of Nottingham and Edinburgh. Starting with the cover of the well-known 1995 book From Dearth to Plenty, by Kenneth Blaxter (of the Rowett Institute) and Noel Robertson, he reminded his audience of the currently threatened “Perfect Storm” involving food, water and energy.

His own research career had started with animal energetics, but experience teaching farm accounts (on new-fangled BBC machines and spreadsheets!) amongst the economics staff at Aberdeen, and collaborative work with SAC colleagues, had broadened his horizons into real-life farm systems and their management over time, especially as regards livestock health and welfare.

Included in several stages in Alistair’s career were studies on (i) genetic resistance to cold amongst lambs, (ii) input-output comparisons of well and sick dairy cows, and (iii) the economic control of MRSA and enteritis amongst calves. Much of this work had shown the value of economics, and more broadly that of multi-disciplinary research in tackling problems of general importance to farmers, both individually and as a group.

Alistair currently heads SRUC’s Future Farming Systems Research Group, which has five Centres: for Beef and Sheep Research on the Bush Estate, for Carbon Management at Kings Buildings, Edinburgh, for Dairy Research at Dumfries, for Epidemiology Research at Inverness, and Hill and Mountain Research at Crianlarich.

Tony Edwards, Professor of Soils and Environmental Chemistry, entitled his Inaugural Lecture “Soil Fertility and the Environment: a Century of Research from North-East Scotland”. Born in Derbyshire, he was attracted to his scientific field by field trips from Sunderland to Assynt, and from Aberdeen University under Malcolm Cresser to his PhD field sites of Glenbuchat and Glen Dye. In 1985, he joined the Macaulay Institute for Soil Research (later Macaulay Land Use Research Institute) as a scientist in the Soil Fertility Department. His main research interests relate to soils, nutrient cycling and particularly phosphorus. During his career, he has published over 130 papers, and devoted much attention to international collaboration and to long-term data, going back to the days of Professor Hendricks at Aberdeen University. In his lecture, he noted
Sinclair’s 'New' Statistical Account (1834-45) finding that Scottish soils are generally rather sterile, with only 25% (possibly 40%) regarded as productive “with immense labour”, and 50% “doomed to sterility”. Its sub-soils are not conducive to cultivation, which has implications for the Land Capability for Agriculture. Nowadays, with 40% of our food refrigerated (using much electricity), the effect of seasonality on our diet has lessened, but soils still affect the geographical distribution of the country’s population. Tony finished his lecture with a plea for conserving and analysing our soil and other scientific records, whether soil and field survey results, or ‘lost’ advisory information.

**SRUC Student Numbers and Courses**

Student numbers for Agriculture courses at Craibstone for 2014-15 are: 16 for the Higher National Certificate, 30 at Level 1, 28 at Level 2, 13 at Level 3 and 12 at Level 4, i.e. a total of 99. These figures are, according to Agriculture Programme Leader Caroline Daniel, “highly satisfactory”, not only in terms of their general magnitude but also in terms of room and minibus capacities!

A new BA course in Rural Business Management has been launched to meet the demands of Scotland’s Rural Industry

**SRUC Rural Surveying and Land Use Students visiting Ballaterach hill farm near Ballater, courtesy of Ian Christie (farmer)** (Ian and Rachel Christie were both SAC students, and in fact met at Craibstone)
Scotland’s Rural College (SRUC) has welcomed the first students in Scotland on to the RICS-accredited BA in Rural Business Management. The only undergraduate course of its kind in Scotland, the four year degree is designed for those keen to work in estate management, land and estate agency. Graduates – with the necessary work experience – can then progress to the RICS APC (Association of Professional Competence) rural pathway leading to chartered surveyor status.

Due to a lack of relevant courses in Scotland, it had previously been necessary to study estate and land management courses in England, where the law and conditions can be different. However, the degree will be taught at both the Edinburgh and Aberdeen campuses of Scotland’s Rural College and so will be more relevant to Scottish students.

Programme Leader, George Robertson, commented:

“The Rural Business Management degree addresses typically Scottish conditions. Those wishing to take the RICS accredited route must include specialist course modules focusing initially on understanding and managing arable and livestock agricultural systems, together with agricultural premises. Students will then study woodland management, property valuation, surveying & land-use and planning and land law.”

John Hillis, Head RICS Scotland Rural Professional Group Board, commented:

“There has been great interest from students looking to take up the course. RICS accreditation utilises the skills of RICS academics and employers in assessing each university programme to ensure courses meet the high standards demanded by RICS. There is a high demand for qualified entrants to the estate and land management industries in Scotland and as we welcome students on to all levels of the course we expect significant numbers of graduates to meet this demand, with the first cohort students graduating in July 2016.”

From The Gaudie, 25 March 2014:

“Spring Trip Ideas – Bring on Bennachie …. this hidden gem in Aberdeenshire.”
SRUC Aberdeen Honours Project Dissertations 2014

The following projects were undertaken for SRUC Craibstone Honours Dissertations in 2013/14:

BSc Agriculture

<table>
<thead>
<tr>
<th>Student</th>
<th>Project</th>
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<tbody>
<tr>
<td>Lynn Argo</td>
<td>Changes in backfat and weight in pregnant and lactating sows</td>
</tr>
<tr>
<td>Carla Coghlan</td>
<td>Primary seven schoolchildren's knowledge of food and farm produce in Aberdeen and Aberdeenshire schools</td>
</tr>
<tr>
<td>Maxwell Murray-Smith</td>
<td>Potential use of fluorescent Pseudomonads, Bacillus spp. and Trichoderma spp. in controlling the development of silver scurf in stored potato tubers</td>
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BA Rural Business Management

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<tr>
<th>Student</th>
<th>Project</th>
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<tbody>
<tr>
<td>Joanne MacAskill</td>
<td>The costs of different methods to control sea lice infestations in the Scottish salmon (Salmo Salar) farming industry</td>
</tr>
<tr>
<td>Stephanie McFarlane</td>
<td>The level of consumer awareness of the EU Protected Food Names scheme within Scotland</td>
</tr>
<tr>
<td>Abigail Ross</td>
<td>The financial impact of Equine Grass Sickness on the Scottish equine industry</td>
</tr>
<tr>
<td>Nicola Strachan</td>
<td>The incidence and control of bracken on the Isle of Mull and Argyll</td>
</tr>
<tr>
<td>Joanna Taylor</td>
<td>The financial impact of liver fluke on Scottish sheep farmers</td>
</tr>
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SRUC Student Association

Briony Dall and Alex Robb are respectively the Student President and Vice-President for 2014-15. Briony finished her HNC course in Animal Care at the SRUC Elmwood Campus in 2014. Alex hails from Aberdeen but most of his family are from a rural/farming background in the Northeast of Scotland. He was a student for four years at Craibstone, graduating with a BSc (Hons) Sustainable Environmental Management in 2014. During his time as a student, he was class representative and joint-president of the Rural Skills club, played drums for the music group (still does when tie permits!) and organised the SRUC Movember team which raised £1200 for charity. As Vice-President, he aims to:

- Engage with students and ensure that all voices and ideas are heard.
- Bring the campuses together through inter-campus activities and events and ensure that all SRUC students feel like part of the team.
- Support the clubs and societies on all of the campuses, ensuring that they have the resources they need.
- Support the campus officers and the student president in their roles to maintain positive relationships between staff and students.
- Promote SRUC as the leading land-based educational institution and ensure that we are respected equally with the top universities in the UK.
- Make SRUC the first choice for prospective students.

Alex writes: "My decision to study sustainable environmental management at SRUC was partly down to me always enjoying the outdoors with geography being my favourite subject at school. Being in the energy capital of Europe where there is a high presence of oil & gas and increasingly renewable energy developments, also encouraged me to study an environmental subject. I really enjoyed studying at Craibstone, it’s a nice campus with a rural feel, yet you are only 5 miles from the centre of Aberdeen. I mixed with students from other subjects which I feel helped to broaden my knowledge of the rural sector and also set me up well for a role in SRUCSA.

I’ve enjoyed being Vice-President; it’s been a really diverse job where I attend a variety of committees and boards such as the environmental committee, academic development committee and research board. I’m based at Craibstone and regularly talk to students, and I always make an effort to speak to students when I’m at other campuses, and regular communication to the executive team (campus officers, postgraduate officer and sabbaticals) mean I know what is happening at each campus.

I assist the campus officers who ensure students are represented at a campus level as well as organising events and supporting clubs & societies.

Craibstone Engineering Club

The Craibstone Engineering Club is based at the SRUC Aberdeen campus, and gives students the opportunity to learn some practical engineering skills and get involved in some interesting projects. Malcolm Macdonald is the current Club President and organises the club in conjunction with Andy Findlay, a lecturer in
agricultural mechanisation at the College. Retired agricultural engineering lecturer Doug Scott also regularly comes along to contribute his valuable knowledge.

During the first term of the 2014/15 academic year, work continued on the Land Rover after encouraging progress last year. The topper was scrubbed down with a grinder and wire brushes, and then repainted, and new wood was cut to size, treated and bolted on. A number of slightly smaller projects were also completed: two small car trailers were stripped down and refurbished, and one of the lecturer’s lawn mowers was fixed as well.

We also got a look at some more modern machinery when the College got a 240 hp Fendt out on demo. Everybody got a run in the tractor while Andy described what all the equipment was for. Work also began on a Ford 3910 bought from the College: its use for gritting had caused a lot of rust in the tin work and cab.

In term two, work on the topper was finished, and the Ford is now in much better condition, with most of the tin work sanded down and re-painted as well as some parts of the cab floor being replaced.

Another main project has been the Institute of Agricultural Engineers Young Engineers competition, which consists of building and designing a robot to climb a steep ramp. Last year we entered a team with two students, Alexander Jamieson and Scott Watson (both now graduates), who did terrifically well and came third! We’re hoping to have similar success this year, although we’re currently still working out the final details of the design.

In term three, we’re hoping to make more progress with the Land Rover and possibly do a little fabricating, repairing parts of the bulkhead and chassis. This should provide some valuable experience of basic welding skills. We will also be on the lookout for new projects for 2015/16 academic year.
The Aberdeen School of Agriculture Building, 581 King Street

From University Court minutes, it appears that the School of Agriculture (now the MacRobert Building) was a former playing field (and probably fields before that: folk still living remember cows being driven up the High Street to the fields of Tillydrone).

12th March 1962, Minute 720: ‘That the total area which may thus be regarded as the site for the Joint Agriculture Building and for the possible future extension, including all car parking facilities, etc., extends from St Machar Drive to a line, running almost exactly east and west, approximately 550 feet south of the end of St Machar drive along the existing bank in the playing field; the western boundary is the line of the existing bank some 330 feet from King Street at its junction with St Machar drive.’

9th March 1965: Minute 607: ‘With reference to Minute 516 of 9th February 1965, Principal stated that Mr. William Ross, Secretary of State for Scotland, had accepted an invitation to lay the foundation stone of the Joint School of Agriculture on 25 June 1965’

And from the Aberdeen University Review XLIII page 14-15: ‘On 28 October 1968, the Right Honourable the Lord Polworth, Chancellor of the University, opened the modern ten-storey building erected on University ground at the corner of St. Machar Drive and King Street. The ceremony was attended by over 350 guests of the University and the North of Scotland College of Agriculture. Sir William Ogg, Chairman of the Board of Governors of the College, presided and outlined the long history of agricultural studies in Aberdeen …. The building, which houses the School of Agriculture, was jointly financed by the Department of Agriculture and Fisheries for Scotland and the University Grants Committee …’

The Farmer will never be happy again;
He carries his heart in his boots;
For either the rain is destroying his grain
Or the drought is destroying his roots.

A.P. Herbert, “The Farmer”, in Tinker Tailor (1922)
Laying the foundation stone at the new School of Agriculture in June 1965 is Scottish Secretary, Willie Ross. Sir William Ogg presides at the ceremony. Evening Express, April 1996. © Aberdeen Journals Ltd.
**Gold for Ross at Pinnacle Awards**

*Published Wednesday, 30th April 2014 in SRUC’s ‘Education News’.*

Ross Learmonth, a third-year BSc Agriculture student from Methlick in Aberdeenshire, took the Gold Award in the seventeenth Pinnacle Business Management awards, held in the Farmers Club in London.

The Awards give students planning to work in the agricultural industry an opportunity to demonstrate their potential and develop innovative, competitive and realistic business strategies that also meet wider environmental requirements. The projects submitted are normally part of their course work and represent 50% of the total mark, with a 10-minute presentation and judges' questions earning 25% each.

“I am just a simple country lad from rural Aberdeenshire”, said Ross, who studies at SRUC’s Craibstone Campus. “I did not know what to expect and was a bit uncertain. But it was good fun and a real learning experience. I enjoyed meeting the other candidates as well as the trip to London.”

Some £6,000 of prize money was available through the Wilfred & Constance Cave Foundation, with administrative and other support provided by ADAS and the Farmers Club. The judging team comprised Chairman Professor David Leaver, ADAS consultant Tony Turner, Farmers Club Chairman Jimmy McLean, Farmers Club past Chairman and Cave Foundation representative Roy Walker, with Farmers Club Journal Editor Charles Abel, who said: “Ross impressed the judges with his robust and well thought out business case study, his strong interview performance and a particularly engaging and clear final presentation.”

Ross’s presentation was based on a planning and budgeting exercise carried out as part of his course work. It was based on a farm where the owners were supposed to have stepped back from day-to-day involvement. Although soft fruit is their main business, Ross had identified ways of improving returns from the arable parts of the farm and the introduction of a new sheep enterprise. Ross and his SRUC tutors are grateful to Murray Mitchell at Castleton farm Fordoun, who hosted the case study - without stepping back from his day-to-day work!

As winner he received the Nickerson Cup, and the Farmers Club Gold Student Pinnacle Award of £2,000. All the finalists receive a year’s subscription to the Farmers Club in Whitehall, and their college receives £300 towards expenses.

The second SRUC entry was from BSc Agric Joseph Williams from Tiree, studying at SRUC’s Ayr riverside campus. His presentation was based on a goat farm which was in turn a management skills and entrepreneurship module group project. Joseph had previously been one of the winners at Agriscot. “Coming from an island, the visit to Whitehall, where the Farmers Club is, was a bit of an eye opener. The competition was tough and Ross deserved to win but I found the competition very worthwhile and rewarding.”
Agriculture in the Research Excellence Framework

In the 2014 UK-wide REF (the successor to the previous RAE rounds), both SRUC (which made a joint submission with the University of Edinburgh’s Roslin Institute) did well within the ‘Agriculture, Veterinary and Food Science’ group. In the SRUC/UoE submission, all the research made the top rank (“world-leading” in terms of quality) under the “Environment” standard, and over three-quarters under the “Impact” one. Projects submitted included: building a scrapie-resistant international sheep flock, controlling bovine TB, reducing Agriculture’s greenhouse gas emissions, minimising livestock stress during transportation, and visual evaluation of soil structure.

Aberdeen University was rated top in the UK for the work of its environmental and soil scientists, with 56% rated ‘world leading’, and a further 36% deemed ‘internationally significant’. Work in this area included the discovery that rice is a major dietary source of inorganic arsenic, the development of a tool to make it easier for planners to weigh up the carbon calculations involved in wind farms, and a study examining the ways of reducing the climate impact of agriculture. This last involved the Cool Farm Tool (CFT), an online greenhouse gas calculator that is free for growers to help them measure the carbon footprint of crop and livestock products. The CFT is an online, farm-level greenhouse gas emissions calculator based on empirical research from a broad range of published data sets. It is designed to be intuitive and easy to complete based on information that a farmer will have readily available. The tool identifies hotspots and makes it easy for farmers to test alternative management scenarios and identifies those that will have a positive impact on the total net greenhouse gas emissions. Unlike many other agricultural greenhouse gas calculators, the CFT includes calculations of soil carbon sequestration, which is a key feature of agriculture that has both mitigation and adaptation benefits.

The CFT was originally developed by Unilever and Dr Jon Hillier and his team to help growers measure and understand on-farm greenhouse gas emissions. The CFT has since been tested and adopted by a range of multinational companies, such as PepsiCo for more than 80 Walkers crisps farms, Marks and Spencer for Indian cotton within and outside the Better Cotton Initiative, and CostCo for organic egg production in the US.

The CFT won the prestigious ‘Practice with Science’ Award 2015 run by the Oxford Farming Conference and the Royal Agricultural Society of England, and comes with a £10,000 grant from the event sponsors AB Agri. The new funds will be used to further develop the Tool, including an economic assessment module.

According to the Quacquarelli Symonds (QS) World University Rankings by Subject (see www.topuniversities.com/university-rankings/world-university-rankings/2013), the University of Aberdeen ranks in the top 100 universities for Agriculture and Forestry. This company’s rankings are based on the following indicators: Academic Reputation (40%), Employer Reputation (10%), Faculty:Student ratio (20%), Citations per Paper (20%), International Students (5%) and International Faculty (staff) (5%).
ABERDEEN AGRICULTURAL GRADUATES ASSOCIATION

Gleanings from Graduates and Staff

Dr Iain Wright (BSc(Agr) 1978) moved in June 2014 from Addis Ababa in Ethiopia to Nairobi in Kenya, to take up the position of Deputy Director–Integrated Sciences, still within the International Livestock Research Institute (ILRI). ILRA is a member of the CGIAR consortium of more than 60 governments and public- and private-sector institutions supporting a network of 15 agricultural research centres working to reduce poverty, hunger and environmental degradation in developing countries.

Keith Hewitt (BSc(Agr) 1996), of Methlick, married Lesley Alison Cruickshank, of Belhelvie, on 18 July 2014.

Steven Jack (BSc(Agr) 1988) of Inverness was one of the 3 finalists in the BBC Outstanding Farmer of the Year Competition. Steven specialises in carrot and potato growing, employing 40 staff and farming 200 hectares throughout Morayshire and Inverness-shire. Steven’s work on breeding techniques and improving quality also led to him winning a M&S Farming for the Future award for Scotland. He has shown innovation in extending the growing season and helping to reduce dependency on imports.

Emma Penny (BSc(Agr) 1993), from Shannas, Mintlaw, and a member of Norgrass (the North of Scotland Grassland Society), is editor of the Farmers Guardian, farming's national newspaper. In 1993, Emma followed in the footsteps of her father John, winning the SAYFC and Norgrass grassland competition. She wrote for farming, road haulage and construction titles before joining Farmers Guardian and its website www.farmersguardian.com as editor in 2008.

George Proctor BSc(Agr) – though not a AAGA member - writes from New Zealand:

While we’re verging on a drought here on the southern edge of the South Island’s Canterbury Plains, thanks to widespread irrigation most of the countryside is lush and green.

Dairy farms dominate the landscape around here, with just over 5 million dairy cows in the national milking herd. New Zealand exports 95% of its production, and due to good world prices in recent years, the conversion of sheep/arable farms to produce “white gold” has
been constant. In Canterbury, there’s 100,000 more dairy cows than last year, and the average size of a milking herd is 797 cows.

In New Zealand, irrigation is crucial to the economy. While there is an abundance of water, it doesn’t always fall in the right place at the right time, which is why irrigation and water storage are so important for the future of dairying. Just like in Scotland, there is too much rain in the South Island’s west coast. With several water harvesting schemes being planned to store flood water from the eastern flowing rivers, storage dams will allow more irrigation of the previously drought prone Canterbury Plains.

One project just completed is the Rangitata South Irrigation Scheme which supplies 16,000ha of farmland with water. Floodwater is diverted into 7 ponds which have been excavated on what was previously a 300ha farm. These ponds store 16 million cubic metres of water which is enough to provide 30 days irrigation for the farms in the scheme. This water is usually applied by sprinkler irrigation using centre pivot systems. These centre pivots distribute water more efficiently than other irrigation methods. Another planned scheme is the Central Plains Irrigation Scheme, which will irrigate 60,000ha.

Another interesting development for the dairy industry has been using shorter gestation bulls. Because the NZ dairy industry is based on a mainly grass-fed system, cows calve in the spring, produce milk for 10 months, and are dried off over June and July, when grass growth is very slow. It is vital that calving is condensed to fit into this pattern, so late calving cows are not wanted. Research over 15 years has produced some bulls that have up to 20 days shorter gestation length which translates to an average 10 days shorter gestation period on farms. The female offspring are not suitable for dairy replacement. This earlier calving means 10 days more milk, and this equates to a substantial amount over all of New Zealand’s dairy farms.

Sheep and beef farmers are receiving record prices just now which is all the sweeter because their dairying neighbours are due to get only NZ$4.70 per kilogram of milk solids for this season, compared to a 2013/14 payout of NZ$8.70 per kilogram. An average cow produces around 400kg of milk solids per year, and the exchange rate is NZ$2 to 1 pound sterling. Dairy farms are averaging around $50,000 per hectare and the stocking rate is four milking cows per hectare.

This increase in dairying has resulted in a shortage of staff, and there are now many workers from South America and the Philippines who fill this gap.

Where irrigation is possible, Canterbury is an ideal place to grow grass with its long growing season, warm temperatures and short, mild winters. Unfortunately there has not been much rainfall for the last few months, and we are now in a drought. However, with temperatures in their mid-twenties this weather is perfect for the many tourists who visit this lovely part of New Zealand.
Roy Sutherland writes from deepest Sussex:

"I'm not doing mountain climbing here, but do get out with Mid-Sussex Ramblers fairly regularly. I am amazed how many beautiful paths there are around here, and the ones up the downs are steep enough to get you puffing.

I can't think of any great story about 581 King Street, but what comes to mind are many good Christmas parties. For the first one, I was on the Social Committee, and I remember spending an evening after work in the projection room above the hall putting together a tape of music to dance to. This went down well on the night, though I think for all the subsequent parties we had live music provided by Owen McPherson's band (sad that he died so young).”

Alasdair Orr (BSc(Agr) 1997) started his career at the Institute of Directors in London, and then moved on to a number of London-based marketing agencies as an outsourced new business consultant before he joined SugarShaker in 2004. SugarShaker.com is a virtual agency which develops websites and provides online services. From his base at Doune, Alasdair writes:

“At SugarShaker, we cover many sectors but are trying to specialise more with agri clients (closer to my heart, I suppose!). We currently do Marshall Trailers, Dowdeswell Ploughs, Argyll Hill Lamb, with a few others from the agri sector in the pipeline. Just bought some land on the Carse of Stirling, rear a few heifer replacements, fatten a few pigs plus help[ing] neighbouring farmers throughout the year aside from the day job - all small-scale but have to start somewhere. Wish I'd paid more attention in the MacRobert building all those years ago - some refresher courses would come in handy!”

Maureen Johnston (neé Reiach) is trying to contact a Henry Gordon Cameron who was an agricultural student at Aberdeen University in 1962, and may have graduated in 1963 or 1964. Are you able to assist? Maureen is an Aberdeen University Arts Graduate and a few years ago completed a certificate in online education at Aberdeen University. She graduated MA Ord in 1962 before going to New Zealand, and soon after lost touch due to a number of reasons including many relocations.

Franz Mizera (BSc(Agr) 1967) was stimulated by Elizabeth Lowe’s article in the previous issue of the Proceedings, to write:

I turned 70 last year, so that makes me just a wee bit younger than the actual Land Girl generation, but I can certainly relate to all that stuff about potato pits in the fields, hay-making the old-fashioned way, and all the rest. Memory Lane revisited! It was not until I was
about 14 that I saw my first combine harvester, and about five years later I was driving one, a Claeys - Belgian, I think!

Reading about what the "later" graduates have done in their careers confirms in a sense just how limited our opportunities (or maybe ambitions) were, when we graduated. I emigrated to Australia right after graduation, and that was considered then to be a really big deal - very daring! No jumbo jets in those days - I sailed out by Cunard liner like the £10 "Poms"! When I look at the recruitment pages in *The Economist* these days, I cannot help wondering what the proliferation of agencies, consultancies, international organisations, etc. etc. are really doing, who finances all this, and what is the extent of duplication and effectiveness? Nothing really like this existed when we graduated - the FAO was for us a remote outfit which published reports; development economics was taught in the economics class - to our knowledge no one really "did it", and so on. We were very poorly informed about careers. Most went into farming, if they came from there; then the Min of Ag, advisory services, and one or two into agri companies. All pretty riskless in those days - you could literally walk into a job without much trouble!

In the late 1990s, I joined a Finnish/Scottish (Edinburgh Uni) consortium which was trying to win a big contract from the EU to reorganise wool production and parts of the Russian textile industry - wool and linen. I travelled around in Russia for two weeks, gathering the kind of info needed to put together the project - language no barrier as I spoke Russian. We put together quite a good package but did not get the contract in the end because the Italian competition had a better package on offer - a large brown envelope slipped to the Russian guy on the panel. He had the deciding vote! There was lot of this going on!

While in Moscow, I visited the TACIS program office: I think they belonged to the European Bank of Reconstruction and Development in London (another very expensive and not very effective outfit, in the main). I happened to go to their library and browsed through some "research "reports. There was one done on milk production in an area of Russia - how to improve yields, new technology, breeding improvements, nutrition, etc. It was so sophisticated and required such colossal investment, that it would have made your hair stand on end, even with the resources and knowledge available in the West! To put this forward as a solution in Russia at that time, for state farms, was ludicrous. An American consultancy, of course, did the work, assuming unlimited resources and a highly skilled workforce being available. At that time (as today), there was still a lot of hand-milking going on in Russia, and a lot of "peasantry"! I think this report never left the shelf, and there was lot of this kind of "aid" given - self-enrichment!
Deaths: Maitland Mackie, Dougal Mackintosh, and others

Dr Maitland Mackie, BSc(Agr) MA DBA FRAgS CBE LLD

Maitland died, after a short illness, on 31 May 2014 at the age of 76. The third generation of the well-known Aberdeenshire family, he was educated at Daviot Primary and Aberdeen Grammar Schools, and took his Agriculture degree at Aberdeen in 1958, when he met his future wife Halldis – Student Charities Queen that year while Maitland was Charities Convenor! Halldis became a community GP in Aberdeenshire, and died only a few months before Maitland, after playing a major role in the family business. In the 1960s, while developing the family farm into a major dairy and milk retail business, Maitland found time to take a second Aberdeen degree, an MA in Economics, gained in 1971. He was awarded an honorary law degree by the University in 1996, served on its Court after 2000, and was elected University Rector in 2012.

In the 1990s, before handing over to his son (the fourth Maitland), he undertook a major rationalisation, consolidating the farming side into two major land blocks, selling the milk retailing side, and investing in an ice-cream dairy within the old farm buildings at Rothienorman. The enterprise became the second food business in Scotland to be awarded ‘Investors in People’ status, and has 45% of Scotland's premium ice cream market. Potato crisps were later added to the brand, and very recently chocolate products.

More widely, Maitland chaired Grampian Enterprise Ltd, the Scottish Agricultural College, and the food and animal committees of the Agricultural Food Research Council. He was also a board member of the Priorities Board for Research in Agriculture, the Rowett Research Institute, and several other organisations. He was the main force behind the farm produce assurance movement in Scotland, and founded the Scottish Pig Industry Initiative, noted for its pioneering concept of industry self-disciplining to best practice under inspection schemes - an achievement that earned him the David Black Award. He was also a vocal supporter of wind power, particularly arguing for its local and national benefits.

He was heavily involved in the local community, being active in Liberal politics, a Scout leader for 20 years, and chair of Grampian’s Help the Aged jubilee committee, for whom he raised £120,000 locally. He amassed a similar sum, through the agricultural sector, for Aberdeen University's Quincentenary campaign, and many AAGA members will have an oak tree from that time.

Maitland and Halldis were both outdoor adventurers in many parts of the world, including Norway, Switzerland, the Arctic, South America and Bhutan. They are survived by their three children, nine grandchildren, his brother and four sisters.
Dr George Macdougal (Dougal) Mackintosh

Dougal died in Aberdeen on 29 November 2014 in his 90th year, after a short illness. Born in Edinburgh, he was educated at Gillsland Park Preparatory School and George Watson’s Boys College, and his National Service coincided with the latter part of World War II. After almost a year with the Scots Guards, he then transferred, as Piper Mackintosh, to the Queen’s Own Cameron Highlanders, spending time in both mainland Europe and Malaya.

Before joining the forces, he had worked for short periods on farms in Dumfriesshire and Midlothian. On his return, he would have liked to become a farmer himself, but, not coming from a farming family, he chose to study Agriculture at the University of Edinburgh. On graduating in 1951, he joined an Agriculture Research Council unit in Edinburgh, working on the internal parasites of sheep, and then moved to Aberdeen in 1953 as a Lecturer in Agricultural Zoology at the North of Scotland College of Agriculture, at first with a lab in Marischal College before moving to the newly built 581 King Street.

Following his marriage to Alice in 1954 (who died four and half years ago), the family spent 1957/58 in the United States, where Dougal studied for a year at the University of California for a Master of Science degree in entomology. He also studied on a part-time basis at Aberdeen University for a PhD in Plant Nematology which was awarded in 1971. Latterly his work was a combination of lecturing, advice and conservation. Many College and University students and farmers benefitted from his expertise. He retired, as a Senior Lecturer, in 1987.

For 23 years he was involved with FORAK – the Friends of the Royal Cornhill Hospital – becoming its Chairman, and he also served on the Local Health Council. He was an enthusiastic stamp collector, focusing primarily on zoology on stamps, being a past President of the Aberdeen Philatelic Society and also of the Association of Scottish Philatelic Societies. A keen gardener, in particular growing alpines, he was a member of both the Aberdeen and Scottish Rock Garden Clubs. A proud Scot with a keen interest in Scottish history, he was the runner-up in the Grampian TV quiz programme Superscot in 1984.

In March 2014, he was presented with a certificate to mark 60 years as an elder first with the West Church of St. Andrew and then its successors, latterly Rubislaw. He served for 20 years first as Clerk to the Congregational Board and then as Session Clerk at St Nicholas Union Grove/Langstane Kirk. He is survived by his daughter Sheila, son Alasdair and daughter-in-law Andrea.

Dr Ian E. Edwards

The deaths are also recorded here of Forbes Davidson (died 15.9.2013), James Ure (in Australia), in August 2012, and Joseph L Keppie (BSc(Agr) 1953), latterly at Milnathort, on 7.2.2014.
The Objectives of the Association

The constitution of the Association states its objectives as: "(a) to establish and maintain a corporate spirit encompassing past, present and future students in agricultural and related disciplines; (b) to maintain links between Members and the teaching and research in agriculture-related disciplines at appropriate academic institutions at and around Aberdeen; (c) to strengthen agriculture-related education and research at the above institutions; (d) to promote discussion on agriculture and its national and international role”.

Some years ago, membership of the Association was widened from the University of Aberdeen to include staff, graduates and students of the Scottish Agricultural College (SAC) at Craibstone.

The AAGA Website

Thanks to the efforts of Dr Trevor Stuchbury, the revamped AAGA website is now working, though as yet still in incomplete and provisional form, and can be accessed at www.aaga-network.org. It includes a number of external links, including one to the AAGA Facebook account.

Please take a look at the website, and suggest ways in which it could - without too much effort or cost! - be improved, enlarged, etc.

AAGA E-Bulletins June and December 2014

June 2014

The AGM in April marked the Association’s 25th year, a monument to Peter English who started off the hale jing-bang in 1989 when the world was younger. Things are now much changed, and continue to do so, on all fronts: technology (think GPS and GM), markets (real food prices up 50% since the early 2000s), academia (SRUC in a “new alignment” with Edinburgh University) and policy (CAP reform and/or Independence, anyone?). And the death of Maitland Mackie has removed a major star in the NE agri-business firmament.

Of course, the weather was never a constant: spring 2014, after a relatively mild winter, has been just about ideal – none of the snowstorms of 2013, though I did pass through a sandstorm off the fields near Kincardine o’Neil in April. The grass is green, the calves and lambs frisk: what can go wrong?

At the AGM, the main formal event was the replacement of James Petty as Hon. Treasurer by Caroline Daniel – or Abel as some of you will remember from learning farm business management in 581 King Street. Caroline is a Lecturer in the Ferguson Building at SRUC Craibstone, and also Agriculture Programme Leader. She and I will settle down this summer to go through the AAGA membership lists and bank statements together: we suspect that there will be a bit of weeding and
chasing-up to do. If you are not an AAGA Life Member, and have received this e-bulletin, and/or the AAGA *Proceedings* in March without a noticeable dent of £6 in your bank balance, please cough up now to avoid future harassment!

With ref. to the *Proceedings*, envelopes marked “Not known at this address” have arrived back from: Thomas Mitchell, Cambridgeshire; Hamish Farmer (graduated 1989?), Norwich; Robert Love, Lincolnshire (“now relocated to Scotland”); and Michael Fleming (1986?), Berwickshire: any information on current locations will be gratefully received.

Recent “newsy” items include:

- A 50-year reunion at Craibstone of the 1963 NOSCA Agriculture Diploma class, organised by John McLaren from his mixed farm in Perthshire
- The 80th year of the University student newspaper *Gaudie* with an article on Bennachie as a “hidden(?!?) gem in Aberdeenshire”, and a “stellar year” for the AU Rugby Club
- An MSc degree in Rural Business Management has been recently validated (*FBOM redux!*), and another in Agricultural Professional Practice is being prepared
- Congratulations to Steven Jack (son of David), who was one of two runners-up in this year’s BBC ‘Outstanding Farmer of the Year’ competition; he specialises in carrot and potato breeding and growing, and employs 40 staff and farms 200 hectares throughout Morayshire and Inverness-shire
- A partnership between SAOS (whose Jim Booth gave an interesting talk at the AGM: see next *Proceedings*) and Aberdeen University to explore a credit union for Scottish agriculture
- According to the University Principal’s Update, “Agriculture and Forestry, which is a major part of the School of Biological Sciences, again featured in the top 100” of “World University Rankings” for that subject
- Ross Learmonth, a third-year BSc Agriculture student from Methlick, took the Gold Award for Excellence in Business Management (the first Scottish winner) in the 17th Pinnacle Business Management competition, held in the Farmers Club in London.

Once again, we are always on the look-out for “snippets” and longer pieces for next winter’s *Proceedings*. So if anything in the recent issue or in this bulletin jogs your memory or raises a query, please let us know!

With best wishes

Yours aye, Ken Thomson (Secretary)

k.j.thomson@abdn.ac.uk

December 2014

Dear All

First, thanks to all who responded so quickly and often generously to our emails and letters about “missing subscriptions”. Our new(ish) Treasurer Caroline Daniel and I had been unable to reconcile our bank statements with our membership files, which
bear the unmistakably firm fingerprints of Mrs Isabel James, whom many will remember as the redoubtable Secretary of the Aberdeen School of Agriculture at 581 King Street. Unfortunately, standards have since slipped, with a number of gaps appearing. Moreover, the bank statements are not always easy to interrogate: some AAGA members have moved address, changed banks, or even got married, and some “missing” subscriptions were due to unrecorded Life Memberships, or unusual Standing Order dates or names.

Of about 80 apparent defaulter names, I emailed 33 and wrote to 48 (with some overlap), the rest to be updated by personal approaches, or written off as non-contactable. So far, 32 have responded, of which 9 turn out to be Life Members, and 12 have paid by cheque or new SOs, with only 2 resigning. Given the cost of printing and posting the Proceedings, the exercise has been financially worthwhile, as well as pandering to tidymindedness.

The AAGA Committee met on 21 October, unfortunately with apologies from the student representative Alex Robb, the SRUC SA Vice-President at Craibstone. Healthy student numbers at Craibstone were again reported, with 99 Agriculture students (NC and BSc Levels 1 to 4), carefully grouped so as to fit – just - into classrooms and minibuses!

The Aberdeen Western Peripheral Route (or Bypass) has commenced, with the felling of a huge number of trees (some very fine) to the west of the Craibstone buildings (and elsewhere round the city), The roar of bulldozers rather than chainsaws cannot be far away, though no further AWPR work seems to have yet started elsewhere. Bigger news is of course the possible future move of the SRUC from Craibstone to Thainstone.

North-East Farming had an excellent year after the dreadful summer of 2013, and some price concerns, e.g. cattle. Yields and harvest were mostly above or near record levels. The pig sector is battling successfully against upheavals in the processing sector – though the same cannot be said of NE poultry, which is “on its knees”. The main cloud on the horizon is the new CAP payments, which will leave many of the more intensive cattle enterprises highly exposed.

Once again, “snippets of news” and longer pieces for the next Proceedings would be appreciated. If anything jogs your memory or raises a query, please let us know!

Finally, Maureen Johnston (née Reiach), who graduated MA Ord in 1962 before going to New Zealand, is trying to contact Henry Gordon Cameron, an agricultural student at Aberdeen in 1962, who may have graduated in 1963 or 1964. Can anyone assist? And the Proceedings sent to Majid Ibraheem in Qatar was returned in July marked “unknown”: Can anyone help with a recent address? Majid was a well-known King Street postgraduate student working on cashmere and mohair around 1990, when he graduated.

With best wishes for the festive season ahead, yours aye

Ken Thomson (Secretary)

k.j.thomson@abdn.ac.uk
Draft Minutes of the 25th Annual General Meeting, 2014
of the Aberdeen Agricultural Graduates Association, held in the Ferguson
Building, SRUC Craibstone on 22 April 2014.

1. **Present:** Dr Ian Edwards (Chairman), Dr Kyrsten Black (Vice-Chair), Prof
Ken Thomson (Secretary), James Petty (Treasurer), Collette Coll, Caroline
Daniel, David Jack, Cameron Law and Craig Mackenzie (student reps), Jim
Booth, John Smith, Dr Trevor Stuchbury, Iain Taylor, Christine Watson

2. **Welcome and Apologies:** Ian Edwards welcomed all to the Association’s
“silver anniversary”. Apologies had been received from: John Baines, Dr
Linda Herbert, Isla Guthrie, Keith Hewitt, David Machin, Jim McLaren, John
Mathers, Brian Revell, Fi Rooney, Doug Scott and George Shepherd.

3. **Minutes of 24th Annual General Meeting:** After correction of a minor error
in the names of those attending, and on the proposal of Kyrsten Black and
the secondment of Collette Coll, these were approved *nem. con.*

4. **Matters Arising:** None.

5. **Chairman’s Report:** Dr Edwards reviewed briefly the 2013/14 year. There
had been 4 reported deaths amongst members, and a number of *Proceedings*
had been returned, but the Association was generally “rolling on”. The
Association had supported a staff-student golf match at Craibstone in May
2013. Thanks were due to Kyrsten Black and SRUC for facilities provided.

6. **Secretary’s Report:** Ken Thomson reported that two Committee meetings
had been held during 2013/14, with student representatives attending both.
Jim Marr had resigned from the Committee in autumn 2013. E-bulletins had
been issued in June and December 2013. Membership stood at about 335.

7. **Treasurer’s Report:** James Petty reported figures recently compiled by him
(but awaiting audit) in relation to the two financial years 2012/13 and
2013/14. Subscription income had fallen somewhat but expenditure had risen
despite control of *Proceedings* costs, leading to an increasing deficit which
would have to be addressed. The Association’s bank balance (both accounts)
at 31 March 2014 had stood at £38.47 but there had been no withdrawals
from the Association’s NSC holdings, which stood at £5419.76. Problems
remained in reconciling bank statements with the membership list.

8. **Proceedings Editors’ Report:** Ken Thomson reported that the 25th issue
had been produced in the usual format, and had been generally welcomed.

9. **Election of Office Bearers and Committee:** The following were elected
*nem. con.:* Hon. President: Hamish Shiach; Chair: Ian Edwards; Vice-Chair:
Kyrsten Black; Secretary: Ken Thomson; Treasurer: Caroline Daniel (after
James Petty); *Proceedings* Editor: Ken Thomson, and the following as
“ordinary” Committee members: Collette Coll, Liz Craigie, Bruce Mackie, Eve
Macdonald, Morag Mitchell, Jes Scaife, John Smith, Trevor Stuchbury, Jim
Sutcliffe. Jim Cruickshank was re-appointed as Hon. Auditor.

10. **AOCB:** Kyrsten Black and Liz Craigie undertook to address the
Association’s Facebook account. Trevor Stuchbury reported that the website
cost somewhat over £100 per year to maintain, and received a considerable
number of hits although it was unclear how many of these were by members.

11. In closing the meeting, the Chair thanked all those attending, and in
particular James Petty for his services as Hon. Treasurer over several years.
AAGA Accounts for Financial Years Ended 31 March 2012-14

**Income and Expenditure**

<table>
<thead>
<tr>
<th></th>
<th>2013/14</th>
<th>2012/13</th>
<th>2011/12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subscriptions</td>
<td>1,092</td>
<td></td>
<td>1,173</td>
</tr>
<tr>
<td>Life Memberships</td>
<td>-</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Bank Interest</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,093</td>
<td>1,103</td>
<td>1,274</td>
</tr>
</tbody>
</table>

|                |         |         |         |
| **Expenditure**|         |         |         |
| Postage        | 345     | 448     | 324     |
| Stationery     | 35      | 40      | 30      |
| Printing       | 876     | 887     | 763     |
| Competition\(^{(1)}\) | 200     | -       | -       |
| Honoraria      | -       | -       | -       |
| Catering       | -       | -       | 59      |
| Miscellaneous\(^{(2)}\) | 63      | -       | -       |
| **Total**      | 1,518   | 1,335   | 1,176   |

**Profit /(Loss)**

(-425) (-232) 99

**Adjusted Bank Balances**

<table>
<thead>
<tr>
<th></th>
<th>31.3.13</th>
<th>31.3.14</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current A/c</td>
<td>334</td>
<td>38</td>
<td>(-296)</td>
</tr>
<tr>
<td>Savings A/c</td>
<td>130</td>
<td>-</td>
<td>(-130)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>464</td>
<td>38</td>
<td>(-426)</td>
</tr>
</tbody>
</table>

**National Savings Certificates (Index-linked)\(^{(3)}\)**

<table>
<thead>
<tr>
<th>Purchase Date</th>
<th>Value as at Date</th>
<th>Value as at</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31.3.12</td>
<td>31.3.14</td>
<td>2012-14</td>
</tr>
<tr>
<td>11(^{th}) – 5yr</td>
<td>07/10/1997</td>
<td>700</td>
<td>1388</td>
</tr>
<tr>
<td>15(^{th}) – 5yr</td>
<td>04/03/1999</td>
<td>500</td>
<td>852</td>
</tr>
<tr>
<td>3(^{rd}) – 2yr</td>
<td>31/05/2000</td>
<td>1,732</td>
<td>2867</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2932</td>
<td>5108</td>
<td>5420</td>
</tr>
</tbody>
</table>

Note 1: Competition expenses: SRUC golf sponsorship
Note 2: Miscellaneous expenses £62.96 web hosting
Note 3: No NS&I valuation for 2013; hence two-year gain is shown
**AAGA Membership List**

*In the AAGA Committee, it was suggested last year that the publication of members’ names and graduation years, without specific permission to do so, might be in contravention of legislation regarding the disclosure of personal data. On enquiry, the Information Commissioner’s Office Scotland has opined that this is unlikely to be so, given that graduation names and dates are already in the public domain, and that the Proceedings go only to AAGA members. Thus the list is once again provided below – by year rather than in alphabetical order, given a past complaint!* However, anyone who would prefer their name to be deleted from the list below (or to be redacted from the version to be placed on the AAGA website a year hence) should of course ask for this to be done. We will also take a look at the AAGA membership application form to see if a line or two should be inserted to clarify this issue for new members.

<table>
<thead>
<tr>
<th>Year</th>
<th>Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>1945</td>
<td>Dr J G (Hamish) Shiach (BSc Eng)</td>
</tr>
<tr>
<td>1948</td>
<td>Mr John Wilson</td>
</tr>
<tr>
<td>1949</td>
<td>Mr William Innes, Mrs Audrey M Low-Mitchell, Mr William G Mathewson</td>
</tr>
<tr>
<td>1950</td>
<td>Mr Alexander Reid Manson</td>
</tr>
<tr>
<td>1952</td>
<td>Mr George A G Christie, Mr Roderick MacDonald, Mr John Telfer</td>
</tr>
<tr>
<td>1953</td>
<td>Mr William B Ironside, Mr Roy Will</td>
</tr>
<tr>
<td>1954</td>
<td>Mr Angus W Baillie, Mr David Jack</td>
</tr>
<tr>
<td>1955</td>
<td>Mr Adam C Anderson</td>
</tr>
<tr>
<td>1956</td>
<td>Mr Andrew Philip Watt</td>
</tr>
<tr>
<td>1957</td>
<td>Mr Hugh L Black, Mr &amp; Mrs David &amp; Rhona Cruickshank, Prof N Lindsay Innes, Mr Alexander Douglas Young</td>
</tr>
<tr>
<td>1958</td>
<td>Mr Jack Burgess, Mr William Davidson</td>
</tr>
<tr>
<td>1960</td>
<td>Mr George S Burgher</td>
</tr>
<tr>
<td>1962</td>
<td>Mr Gordon McKilligin</td>
</tr>
<tr>
<td>1963</td>
<td>Dr Douglas A Corse, Professor Liang Chou Hsia</td>
</tr>
<tr>
<td>1965</td>
<td>Mr D John Hutchison</td>
</tr>
<tr>
<td>1966</td>
<td>Mr Pat Edward, Mr Arthur Graeme Kidd, Mr George W Shepherd</td>
</tr>
<tr>
<td>1967</td>
<td>Mr Charles K Mackie, Mr Franz Mizera, Prof Kenneth J Thomson</td>
</tr>
<tr>
<td>1968</td>
<td>Mr Raymond Allbrooke, Mr Sydney J E Bichan, Dr William V Hutcheon</td>
</tr>
<tr>
<td>1969</td>
<td>Dr David H. Machin, Mr Thomas W Robertson, Dr William Thorpe</td>
</tr>
<tr>
<td>1970</td>
<td>Mr Hamish Coutts, Mr Peter Fowlie, Mrs Lynn D Gilbert (née Willets), Mr &amp; Mrs Chris J Lomas</td>
</tr>
</tbody>
</table>
1971
Mr Gordon Rennie
Mr David S Scrimgeour
Mr Colin J Thomson
Mr David Younie

1972
Dr Alastair Alexander
Mr G Roger Bryce
Mr Bill Robson
Dr Glenn T Scott

1973
Dr N G Gregory
Miss Mary Singleton

1974
Mr Donald W McLaren
Dr Kerr C Walker

1975
Mrs Katie Coward (née Adam)
Dr Linda C Herbert
Mr Archie McLaren

1976
Mr D N Peck
Mr Keith D F Stewart

1977
Mr John R Baines
Mr John D Brown
Mr James S Cruickshank
Prof Philip C Garnsworthy
Mr Nigel Jones
Mr Jamie Robertson
Mr Iain W Taylor

1978
Mr Thomas Alexander Fraser
Mr William Green
Mr Donald MacKenzie
Mr Alan D Maitland

1979
Mr John B McIntosh
Prof Bill Slee
Dr Iain Wright

1980
Ms Rachel Bedingfield
Mr James A Booth
Mr Adam J P Carswell
Mr Willie G S Dobson
Mr Tim J Finney
Mr Jamie Mackay
Mr G A Nicolson
Mr Henry Sleigh

1981
Mrs Lorna Bates (née Scott)
Mr T James Dick
Mr Peter J Hatcher
Mrs Caroline Kettlewell (née Robb)
Mr John D McWilliam
Miss Jennifer Pratt
Mrs Jane Sim (née Mark)
Miss Catherine Ann Southall
Mrs Yvonne Stewart

1982
Ms Debra K Burnham
Mr Andrew S Dyer

1983
Mr John A Haftke
Mr Roddy McLean
Mr Robin Murray
Mr Dennis Overton
Miss Gillian P Whytock

1984
Mr Martin Bell
Mr & Mrs Patrick Graham-Jones
Mrs Jeannie Jamieson (née Hodgetts)
Mr Graham R Mitchell
Mrs Pamela Murphy (née Forbes)
Mr R Austin Paterson
Prof Euan C Phimister

1985
Mr Graham Brunton
Mr J David Chalmers
Mrs Lilian Cockburn (née Love)
Mr Brian A MacDonald
Miss Catriona MacPhail
Mr Kenneth A Slater
Mr David Smith
Mrs Catherine Thompson (née Rhodes)
Mr William Thomson

1986
Miss Aileen Buchanan
Mr Michael Fleming
Mr Mark Guild
Mr William R Hamilton
Mrs Susan Hermiston (née Cowie)
Miss Rachel Jones
Mrs Kathleen Jones (née Harper)
Mr Derek Kennedy
Ms Jane McBain (née Smith)
Miss Susan Nganjone (née Smith)

1987
Mrs Kairsty Ashworth (née Topp)
Mr Richard Beattie
Mrs Yvonne Cassie (née Anderson)
Mr Gilbert Edgar
Mr Brian Ferguson
Mr Jock A Gardiner
Mrs Christine Goldie (née Beaton)
Mrs Sheena Hasslinger (née Fairweather)
Mr Michael J Hatton
Mr Bruce Mackie
Mr Duncan MacPherson
Mr Alistair J Marshall
Mr James McNair
Mr Alistair Melrose
Mr Walter Alexander Reid
Mrs Fiona M C Rooney (née Grieve)
Mr W John Service
Dr Kevin Sinclair
Mrs Catherine Sutcliffe (née Leonard)
Mr Ian B L Walker
Mr Matthew Weaver

1988
Mr Niall W G Arbuckle
Dr Elaine J Booth
Mr Alan W Bruce
Mr Craig B Chisholm
Miss Deborah Donaghy
Mr Andrew J Ferguson
Mr Kevin J Gilbert
Mr Andrew R Gray
Mrs Fiona Hay
Mrs Fiona Higginson (née Gray)
Mr Hugh Ironside
Mr Steven J D Jack
Mr Robert Love
Mr Ian MacDougall
Mr James McLaren
Mrs Doreen Morgan (née Garrick)
Miss Helen Jane Morrow
Mr Paul Racionzer
Mr Stuart N Ramsay
Mr Graham Sinclair
Dr Liam Sinclair
Mr Andrew Sprunt
Mr Alan Struthers
Mr Michael S Tait
Mr Mark W Wilken

1989
Mr Donald A Barrie
Miss Jennifer F Bell
Mr Hamish Farmer
Mr Duncan Alan Fraser
Dr Jane S Kemp
Mr Keith R Murray
Mr Sean O'Dowd
Miss Elizabeth P Scott
Mrs Joanne E Scott (née Davidson)
Mr Donald A Sinclair
Mr Keith T Spalding
Mrs Mandy Stewart

1990
Mr Graham A Brown
Miss Angela H Cliff
Mr J Scott Cockburn
Mr Matthew J Conway
Mr Robert S Craig
Mr J Ben Graham
Miss Justine A B Hare

1991
Mr Allan G Dawson
Mrs Sandra Dawson (née Mauchline)
Mrs Lyndsay E Fairbairn (née Hogg)
Mrs Patricia J MacEachern (née Wilson)
Mr David J Mackinnon
Miss Fiona Macmenemey
Mr Christopher Maitland
Mrs Rachel A Reid (née Smith)

1992
Mr Mark Allan
Mr & Mrs Peter Chapman
Miss Sarah Coe
Mr John Donaldson
Mr Philip Holder
Miss Sharon McCombes
Mr Kenneth McLean
Mr John C Murrie
Mr Charles V Rickard-Bell

1993
Mr Niall A C Campbell
Mr Alasdair R M Cox
Mr David A Grove
Mr John Mitchell
Miss Emma K Penny
Mr James Petty
Mrs Janet Stewart (née Roden)
Dr Kellie Watson (née Rance)
1994
Mrs Suzanne M Corboy (née Cormack)
Dr & Mrs John & Lisa Dunne
Mr Ralph Fallows
Miss Kirsty J Grove
Mrs Victoria J King (née Strachan)
Mr Thomas G Mitchell
Mr James Wilson

Miss Kathleen J Milne
Mr Kennedy Nelson Muturi
Mr Ian Thomson
Dr Emilio Ungerfeld
Mr Adam Wardrop

1999
Mr Owen Clark
Mr Jim Marr
Mrs Judith Taylor née Thomson
Mr John Young

1995
Mr Paul Buckley
Miss Tonya Fitzpatrick-Wheals (née Higgins)
Mr Derek Hanton
Mrs Natasha Waller (née Scott)
Dr Christine Watson

2000
Dr Collette Coll (née Wilson)
Mr Hugh Hamilton
Mr Adam John Lawson
Mr William Mitchell
Dr Patrick Snowdon

1996
Miss Ann Cameron
Miss Helen Christie
Mr Keith Hewitt
Mrs Anne MacLellan (née Shepherd)

2001
Grenenger Banda
Mr Alistair Davidson
Mr Craig Stewart Murray

1997
Mr George C Chalmers
Mr Gregor Alex Colquhoun
Miss Alison E I Craig (née Campbell)
Mr David Henderson
Mr Richard Kirkland
Mr Richard Murphy
Mr Alasdair Orr
Mr James A Rae
Mr Alistair Watson

2002
Miss Abigail Harper
Mr David John Humphries
Ms Karin McGirven
Mr George McWilliam
Ms Mairi E Watson (née Wilson)

1998
Mr Colin Forsyth
Mr Michael Fotheringham
Mr Michael Halliday
Dr Kostas Kousenidis
Mr Peter W Lindsay

2004
Ms Isla Guthrie

2005
Mr Stuart Jamieson
Mr John Smith
Kirsteen Sutherland

2011
Anne Swanson

Graduation date unknown
Mrs Claire Green
Eve MacDonald
Mrs Agnes Mackay
Kathy Meyer
Ms Liz Craige
Miss Fiona E Gebbie
Mr David J Gill

Staff
Dr Eunice J Allan
Dr Kyrstien Black
Rev John Chesworth
Dr Ian E Edwards
Prof Sandra Edwards
Dr Vernon R Fowler
Dr Hugh Galbraith
Prof J F D Greenhalgh
Dr Simon B Heath
Dr Dickon Hovell
Mr R J Isaacs
Mrs Isobel V J James
Mr Donald C Macdonald
Dr Stan Matthews
Prof Robert E L Naylor
Mr Brian Pack OBE
Dr Alison Powell
Dr J R Scaife
Mr Douglas Scott
Dr Trevor Stuchbury
Mr Roy Sutherland
Mr Drennan Watson

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