

**THE HISTORY OF
CANE PEST and
DISEASE CONTROL BOARDS
IN QUEENSLAND**

by BRIAN EGAN

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(1974–89)*

Bureau of Sugar Experiment stations

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Cover image—Greyback canegrub infestations cause heavy yield losses in two canefields not protected by insecticide in North Queensland (with thanks to Sugar Research Australia for providing the image).

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History of Cane Pest & Disease Control Boards

Content

1	Introduction	1
2	Pest and disease problems which led to the setting up of voluntary and statutory Pest Boards and then Disease Boards	4
3	The 1890s attempt to obtain legislation to control cane grubs	14
4	Legislation on Boards – 1916 aborted attempt to introduce compulsory levies and Boards for pest control	20
5	Legislation on Boards – 1923 S.E.S. Act Amendment introduces statutory Cane Pests Boards	24
6	Legislation on Boards – 1934 Act Amendment provides Special Levy for rat control, and the Liens on Sugar Crops Act is applied to Pests Boards	28
7	Legislation on Boards – 1938 Act Amendment introduces statutory Disease Control Boards and improved disease control measures, and the 1941 Act Amendment amalgamates Pests and Disease Control Boards	30
8	Legislation on Boards after 1941 – 1973 Act Amendment gives BSES representation on Boards, and sundry Act Amendments 1946–1983	36
9	Legislation on Boards – Sugar Industry Act 1991 repeals the S.E.S. Act 1900–1983, and sets up Cane Protection and Productivity Boards in place of CPDCBs. The Sugar Industry and other Legislation Amendment Act 2003 provides for dissolution of all statutory CPPBs by 30 June 2004	39
10	Subordinate legislation on Boards – Regulations under the S.E.S. Act and the associated Powers and Duties of Boards	41
11	The Voluntary Pest Destruction Fund System.....	48
12	Development of the Statutory Board System.....	61
13	The Pest Board/BSES/Government relationship	66
14	Annual Conferences of Boards	77
15	Pest and Disease Control work by Boards, an overview for the period 1923–2001	95
16	History of Individual Boards	113
	Appendix: Sources of Information	215

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Chapter 1 Introduction

PESTS AND DISEASES have been major factors in canegrowing in Australia from at least the 1870s, when both canegrubs and a disease called 'rust' began to attack cane. Control measures against canegrubs were urgently required by the early 1890s, and one far-sighted Mackay man began to campaign for the only possible method available at that time.

W.T. Paget, a miller-planter of Nindaroo Mill at Mackay, advocated the collection of beetles from their feeding trees, using compulsory levies from landholders to purchase them. He drew widespread support from canefarmer groups throughout Queensland. The State Government was lobbied strongly from 1895 to legislate for compulsory levies as well as the setting up of statutory boards to control cane pests.

The attempt failed, but Paget left the legacy of voluntary beetle and grub control funds, the first of which were set up in 1895 in Mackay, the Herbert and Johnstone. Strangely, the campaign was forgotten and never appeared in any of the histories of the sugar industry or its organisations.

So in 1995 we should have celebrated 100 years of Pest Boards and their voluntary forebears, and honoured Paget as the 'father of Pest Boards', for his vision during a very difficult period for the infant sugar industry.

The history of why boards were needed and how they developed, with statutory Cane Pests Boards from 1923, Cane Disease Control Boards from 1938, amalgamated Cane Pest and Disease Control Boards from 1941, and Cane Protection and Productivity Boards from 1991, is an interesting one.

That is the main story you'll find in this book, but there is also a complementary story of the development of overall pest and disease control strategies by the Bureau of Sugar Experiment Stations (BSES) within the Sugar Experiment Stations (SES) Act. Legislation on approved varieties, quarantines, destruction of diseased cane, clean plant source schemes, etc was essential if the problems were to be cleaned up efficiently.

The pest and disease control system in Australia, including the role played by Boards, was unique in the sugar world until the 1980s.

It came about through necessity, but was achieved and was successful because of cooperation between all parts of the sugar industry and the Queensland Government.

Without that, progress would have been far slower. Of course, there were times when industry and Government were at loggerheads, and the aborted 1916 legislation on Boards is a good example of this. There were also times when growers and millers could not agree on a common policy. But by and large, cooperation prevailed sooner or later.

We should be thankful for those far-sighted men, within industry organisations, Governments and BSES, who brought this about. It would be impossible to name them all, but one man stands out from the 1930s—Arthur Bell, BSES pathologist from the 1920s, Deputy Director 1935, Director 1943–47, Under Secretary of the Queensland Department of Agriculture and Stock 1947–58, and member of the Sugar Experiment Stations Board 1951–58.

Bell took the concept of Cane Pests Boards(CPBs), built on it by forming Cane Disease Control Boards(CDCBs), improved it by creating Cane Pest and Disease Control Boards(CPDCBs), drafted the legislation which allowed all this to be done, and helped to keep the momentum going in the 10 years after his promotion from Director to Under Secretary. Like Paget, Bell deserves special remembrance for his work as the architect of the Cane Pest and Disease Control Board system.

Finally, we should note that the system was no longer unique in the sugar world. The South African sugar industry found itself in a very serious pest and disease situation by the end of the 1970s. Smut disease was causing serious problems in the major variety NCo376, while the incidence and spread of eldana borer had reached a crisis stage. The South African Sugar Association decided that legally enforceable regulations were essential if these were to be controlled. The control scheme introduced in South Africa has been based largely on the successful Queensland system, with differences to suit their circumstances. The scheme included Local Pest and Disease Control Committees, and continued to operate successfully into the 2000s.

The aim of this history is to chronicle why and how Boards started, and how they developed under the legislation in the SES Act. The Sugar Industry Act replaced the SES Act in 1991, and CPDCBs took on productivity functions in addition to their pest and disease control

functions, to become Cane Protection and Productivity Boards (CPPBs). This phase of their life lasted for only 12 years.

The natural end point for this history was in 2003 when the Sugar Industry Act was amended and both BSES and CPPBs were privatised. The implications for pest and disease control measures and funding were profound! Even further changes occurred in 2012 when the BSES advisory service for canegrowers ceased to operate.

The wheel had turned full circle—we returned in 2003 to voluntary ‘Cane Productivity Services’ with voluntary funding, which now operate under various names but still have pest and disease control measures as one of their major objectives.

Chapter 2 Pest and disease problems which led to the setting up of voluntary and statutory Pest Boards, and then Disease Boards

THE AUSTRALIAN SUGAR industry was very much a ‘hit or miss’ affair in the late 1800s, as it expanded into new areas. Many new growers entered the industry although few had previous experience of canegrowing, and there were no agricultural advisers available to assist them.

There was a general desire by both growers and millers to improve yields and efficiency in their respective spheres. Most growers knew little about the correct cultivation methods for plant or ratoon cane, little organic or artificial fertilisers were used, information on pests and diseases and their control was rudimentary, and varieties were chosen for their appearance as much as for their reputed yields. Yields of raw sugar 130 years ago were abysmal—the 1880s averaged 1.45 tons sugar per acre (T.S.A.), ie 3.6 tonnes sugar per hectare (T.S.H), and the 1890s averaged 1.65 T.S.A. ie 4.1 T.S.H.

The establishment of properly equipped and well-staffed Sugar Experiment Stations was urged in the late 1880s, spurred on by the quick success of such research institutions in Java and Louisiana. Hawaii followed in 1895, with similar quick success. Agitation and lobbying increased greatly in the mid-1890s, spurred on by the very serious grub infestations of the early-mid 1890s. These culminated in the establishment in 1900 of the Bureau of Sugar Experiment Stations (BSES) under new legislation—the Sugar Experiment Stations Act of 1900.

2.1 PEST PROBLEMS

2.1.1 Canegrubs

The demands for a Sugar Experiment Station, and scientific research on sugar industry problems, were fuelled to a considerable extent by canegrub infestations causing serious yield and monetary losses. A feeling of helplessness existed in the face of frequent attacks, with little available in the way of useful control measures. Diseases and other pests also caused problems, while adequate varieties were unavailable.

The canegrub problem also led to the first voluntary pest destruction funds, attempts to get legislation for compulsory levies, and eventually to the establishment of compulsory Pest Boards, as we’ll see in subsequent chapters.

Canegrubs had been a scourge of the sugar industry in central and northern districts almost since its inception. The major culprit was the greyback grub (*Dermolepida albohirtum*), endemic throughout these areas, although other species were present and may have been quite important at times.

Identification of grubs was not easy in the absence of competent advisers. Henry Tryon, Queensland Government Entomologist and Pathologist, made the first detailed investigation of the grub pest in the mid 1890s, and recommended control measures (Tryon, 1896). Early records are incomplete, unfortunately, but Illingworth and Dodd (1921) provided a good review of the early history of canegrub attacks in BSES Entomology Bulletin No. 16.

- **Mackay Infestations**

The earliest record of damage by Tryon (1896) was from Mackay in 1872, only 4 years after the first sugar mill was erected in the district in 1868. The attack was severe:

“During 1872–4 at Branscombe Plantation, the cane growing just outside the scrub land, and between it and the forest land, died off, and in ploughing out the stools the roots were found to have been gnawed through, and cockchafer grubs were found under the stools—from 5 to 20 in each case.”

Further severe attacks were recorded in various parts of Mackay in 1874–5, 1887, 1888 and 1891–96. Grub numbers were so great in 1891–2 that they threatened the stoppage of the industry. Grubs were only ‘serious’ in 1893, but were much worse in 1894–96. This prolonged outbreak precipitated the investigation by Tryon; the introduction of payments for beetle collecting in an effort to reduce damage; voluntary levies by farmers; and unsuccessful attempts to get the Queensland Government to legislate for compulsory levies.

Damaging outbreaks continued in the Central District through to the early 1920s, when Mackay Canegrowers were given the credit for persuading Government to establish compulsory Cane Pests Boards by the 1923 Amendment to the SES Act.

- **North Queensland Infestations**

Canegrubs also became troublesome in several other canegrowing districts in the late 1800s, particularly in north Queensland, although initial dates are lacking in many cases.

The Herbert and Johnstone River districts suffered unusually severe grub attacks in 1891 and 1892, suggesting that less severe infestations had occurred in the 1880s in the Herbert, while Johnstone is known to have suffered some serious damage in several localities in the late 1880s. Note that the first mill opened in the Herbert in the early 1870s, and in Johnstone in 1881. Further severe damage occurred in 1894–96, and these districts joined with Mackay in the mid 1890s to lobby Government for compulsory levies. Serious damage continued to occur at intervals in the 1900–1920 period.

The Cairns/Gordonvale district suffered very serious problems, and detailed accounts were provided by Colonial Sugar Refining(CSR) Company staff. They first noted widespread grub damage in cane on their plantations in 1889, with serious damage in many of the following years. The first sugar mills in the district were only erected in the 1882–84 period. CSR Company Annual Reports in the early 1900s frequently reported serious yield and monetary losses due to canegrubs in their five northern mills, ie Herbert to Hambleton, although most of this was in Hambleton and Goondi.

- **Southern District Infestations**

There are few references to grub damage in southern areas by Tryon or Illingworth and Dodd, although it is known that losses occurred at times. Several species of grubs were found damaging cane roots in the Clarence and Tweed River districts in 1891 (Illingworth and Dodd, 1921). A meeting of the Bundaberg Farmers' Association in 1897 was told that Isis farmers were taking steps to eradicate the grub pest, but nothing was being done in Bundaberg although damage was considerable (SJTC 6:64–65). Isis grubs were still “pretty bad on ridges” in 1899 (SJTC 9:9). A report to the Agricultural Conference in Mackay in 1899 stated that there had been a marked decrease in the grub pest in the Childers district after 30,000 acres of scrub were felled in the past 10 to 12 years (Illingworth and Dodd, 1921). The BSES Annual Report for 1927 noted that beetle collecting had been in vogue in Isis area for 30 years as a control measure, ie since the late 1890s.

- **How to control Grubs?**

Hand-picking of certain beetles and grubs in Europe was used as a control measure in the 1800s, and this was suggested for canegrubs also. It was practised in Mackay and north Queensland from the early 1890s, and probably on an ad hoc basis in the 1880s. Tryon (1896)

recommended it as a possible control method, and it was soon adopted widely.

Money to pay for the collected beetles and grubs was obtained by voluntary levies, or by subscriptions to Pest Destruction Funds, as we will see in later chapters. However, there was considerable resentment of farmers and localities which refused to contribute. They were accused of allowing canegrubs to build up in numbers, to the detriment of those who tried to control them. Consequently, attempts were made to have Government introduce compulsory levies for canegrub control, but to no avail.

This at least gave the appearance of doing something positive about controlling grubs while awaiting new discoveries, even though there was some evidence from the earliest days that cast doubts on its efficacy.

2.1.2 Cane Pests other than Canegrubs

Various other insect and animal pests were problems in some localities or some years, but none could approach canegrubs in magnitude. For example, weevil borers became a serious problem in north Queensland and parts of Mackay from the early 1900s; rats could be locally important, particularly after the 1920s in the Herbert; wallabies were a problem in dry years in open country, etc. None of these played much part in the push for entomology research and Pest Boards.

2.1.3 Pressure for Research on Canegrubs and setting up of Pest Boards

The first 10 years of BSES existence saw much work done on soil, fertiliser and sugar cane analyses, and on some matters relating to the production of the crop in the field. Dr Maxwell, the first Director, firmly believed that the incidence of pests and diseases was merely a reflection of the worn-out condition of the soils which he was attempting to overcome. He made no attempt to begin any entomological or pathological research, therefore, despite the very serious canegrub situation in many districts.

A deep feeling of frustration developed in those areas which were normally infested by canegrubs. Pressure to appoint an entomologist was applied to Government by local canegrower organisations and the Australian Sugar Producers Association (ASPA), particularly at its annual meetings.

This resulted in the first BSES entomologist, A A Girault, being appointed in 1911, but only after Maxwell's resignation as Director.

While much good basic information came from the resultant research, practical controls were a long time in coming. ASPA deputations to the Minister for Agriculture asked for more funds and researchers in 1912 and 1915, and then requested that a compulsory levy be introduced for pest control operations. This could not be achieved.

The pressure for action was too great to resist for long. Representations from Mackay Canegrowers in 1922 were credited with persuading the Government to introduce compulsory levies and Pest Boards in 1923 through amendments to the SES Act.

2.2 DISEASE PROBLEMS

With one exception, disease did not seem to be a major impediment to canegrowers up to the early 1890s.

2.2.1 Rust Disease

That exception was 'rust' disease, which began to damage the major variety Bourbon in the early 1870s in several South Queensland districts. This went largely unnoticed until 1875, a year of abnormally heavy rains, when rust appeared wherever Bourbon was grown in Queensland (Easterby, 1932).

Leaves turned yellowish, then withered away, while cane stalks dried out. Yield losses were enormous as Bourbon was almost the only variety grown, with total production in Queensland only 30% of previous years. Economic catastrophe followed for many growers and millowners who had borrowed heavily to establish their farms and mills, usually at high rates of interest. Many lost everything in the financial panic. Fortunately, several minor varieties such as Rose Bamboo, Rappoe, Malabar and Meera were very resistant. Growers quickly ploughed out Bourbon fields and replanted with the resistant canes. The crisis was over quickly but the financial effects were felt for a considerable time.

The Queensland Government appointed a Board of Inquiry in 1876 to look into diseases of plants and livestock (Griggs,1995). A leading member was Dr Joseph Bancroft, who had previously done much research on banana and sugarcane diseases. No definitive identification of the disease was ever made by Bancroft and other scientists in Sydney and London.

Mites and a possible fungal pathogen were present, with mycelial threads clearly seen, but it was definitely not a rust fungus. Bancroft's report on the problem noted that the disease bore some resemblance to potato blight. The view of later BSES pathologists was that 'rust' was possibly downy mildew disease.

The crisis came and went quickly, unlike the canegrub problem, and was solved easily but not painlessly by changing varieties. There was no residual demand on Government for action on diseases, but it helped to fuel the demands for more varieties.

2.2.2 Gumming Disease

This disease was first reported in 1893 in Australia in Northern New South Wales and in South Queensland, and could be traced back to 1876 on the Clarence River. Tryon (1895) investigated it in the Bundaberg and Maryborough areas, and traced it back at least to 1884. D S North was the CSR plant pathologist for many years in Australia and Fiji, and was 'associated with the disease on and off for 30 years' when he wrote his classic monograph on gumming disease (North, 1936). He summarised the disease position as:

“The early dissemination of gumming disease from Mauritius to Australia probably occurred about 1874 to the Clarence and 1877 to Bundaberg–Maryborough and Mackay. This resulted in the first series of epidemics in Australia—the Clarence peaked in 1893–95, Richmond and Tweed 1893–99, Bundaberg–Maryborough in 1894, Childers and Mackay 1898–99, Herbert 1903–04. Losses were very high in susceptible varieties, which occupied a high percentage of the area, not only in tonnage but also in death of stools and poor ratooning. Yield losses in northern New South Wales were estimated by CSR mill staff at 40% of the total crop tonnage and 17% in sugar content over the 1893–95 period. For Broadwater, losses were 30% in yield and 9% in sugar content over the 1893–99 period. The millers suffered greatly also from the copious gum production in susceptible varieties, which caused many problems in processing.”

Gumming was gradually brought under control in all areas, taking from 5 to 15 years depending on circumstances. Again, substitution of resistant varieties for the susceptible canes was the major control measure, arrived at by trial and error.

There was still no general disease consciousness on the part of growers, but the desire for more cane varieties was reinforced once again.

By 1915, gumming had reached a very low ebb in Australia. It may even have become extinct in some districts by 1920, by which time the proportion of susceptible varieties had risen to over 90%.

The result was predictable—a second series of epidemics began in 1920–22 in northern New South Wales, south Queensland and Herbert River, with minor outbreaks in Mackay and Mulgrave.

The situation was quite different to that in the 1890s and early 1900s. North's research had shown how to control gumming and adequate control measures were implemented in all CSR mill areas through CSR technical field staff. Other areas probably followed suit but less effectively.

BSES was now more attuned to disease control needs also—the first mention of gumming disease in a BSES Annual Report was in 1920. In the 1924 Annual Report, "Disease" first appeared as a sectional heading, and pathology work soon commenced on gumming (Hughes, 1950).

It was in the southern districts from Bundaberg to Nambour that gumming was most severe, in the dominant variety D1135. The disease was well distributed throughout Bundaberg by 1924 and the epidemic climaxed in 1929 (BSES Ann Rep, 1936), by which time average cane yields had fallen by 25%, without considering fields which were not worth harvesting or had to be destroyed earlier. Similar losses occurred in Moreton area, and were probably worse at Isis. The mills also suffered, not only from the poor quality cane and lowered ccs, but also with grave difficulties in the boiling and crystallisation processes. Mungomery (BSES Internal Report on Bureau History, 1968) noted 'great masses of gum adhering to the heating tubes in the Childers Mill in the early 1920s—acting as an insulating agent, slowing the process of boiling, and instrumental in the production of false grain which caused further complications'.

A great deal of hard work was put into controlling gumming disease in south Queensland by growers and BSES staff, introducing, breeding and disease testing new varieties, developing healthy plant sources, ploughing out diseased cane fields. By 1935, gumming was no longer a problem as resistant, more productive canes like POJ2878 were planted avidly.

Growers and their Canegrowers organisation were taking a much greater interest in controlling diseases, and were prepared to take a more active part. Indeed, in mid-1930, a deputation from the Queensland Cane Growers' Council(QCGC) asked the Minister for Agriculture to amend the SES Act to allow Pests Boards to combat diseases as well as pests.

The then BSES Director (HT Easterby) was favourably disposed to it, but government did not proceed with it. Nevertheless, the seed had been sown although it took two more disease epidemics to bring it to fruition.

BSES pathology efforts by Arthur Bell and other pathologists brought a new awareness to growers, but there was also a genuine change through the 1920s and mid-1930s as the benefits of disease control efforts became apparent. This was just as well, as the next set of disease problems loomed up.

2.2.3 Fiji disease

This disease (currently known as Fiji leaf gall disease) was not recognised in Queensland until 1926, having been imported in canes from New South Wales in the early 1920s.

Initially, it caused minor problems in the Beenleigh, Moreton, Maryborough and Bundaberg areas. By the early 1930s, Fiji disease was more serious in Maryborough and Bundaberg, and had spread to Isis. However, the outbreak subsided for a few years before the next advance.

A more serious Fiji disease epidemic began to build up quickly in parts of south Queensland in the late 1930s. This followed the widespread planting of the very productive 'Java Wonder Cane', POJ2878, which was resistant to gumming but susceptible to Fiji and downy mildew diseases.

By 1938, the potential for serious losses and for restrictions on the planting of POJ2878 was obvious to BSES, local District Cane Growers Executives and mills.

With the cooperation and financial backing of Executives and/or mills, roguing gangs were employed at Bundaberg, Isis and Moreton. They appeared to reduce disease levels initially, but then discovered the real extent of the Bundaberg outbreak. The Bundaberg District Cane Growers' Executive was alarmed at the disease situation and the possibility of losing POJ2878. Cane Disease Control Boards, along the lines of the Pests Boards, had been mooted for some time.

The Bundaberg Executive lobbied Government in mid-1938 for their urgent introduction, and was supported by Mackay Executive and ASPA.

2.2.4 Downy Mildew

Downy mildew was probably present in Queensland in the 1800s, and may have been the cause of the serious ‘rust’ disease of the 1870s. It was in the Herbert in 1901, and CSR pathologist D. S. North studied it there in 1910. By this time it was widely distributed in northern and central Queensland, but farmers considered it a curiosity rather than a problem.

By the late 1920s, it was causing problems in some varieties in the Burdekin and Mackay, and had been found in Bundaberg. By 1935 it was of little importance anywhere, but the widespread plantings of POJ2878 were about to change that drastically.

Downy mildew exploded in the Mackay district in 1937 and 1938, causing widespread alarm at the thought of losing POJ2878. The disease also began to spread quickly in POJ2878 in the Bundaberg area from 1937, adding to their problems with Fiji disease control. By 1940, downy mildew was considered to be the major cane disease in Queensland.

The Mackay District Cane Growers Executive decided in 1938 that more stringent controls were needed if downy mildew was to be stopped. Consequently, Mackay joined Bundaberg in lobbying Government for the urgent introduction of Disease Control Boards.

2.2.5 Sustained pressure succeeds in formation of Disease Control Boards

Canegrubs, mainly greyback grubs, were the catalyst that led to the demands for compulsory levies and legislative control of cane pests. The relative success of the statutory Cane Pests Control Boards and their voluntary cousins produced a favourable reaction from most growers and millers, even those who were against the idea initially.

The desirability of having Cane Disease Control Boards took longer to achieve recognition. The gumming disease epidemics of the 1920s, and the loss of many varieties, focussed the sugar industry’s attention on the benefits of disease control. The Fiji and downy mildew epidemics of the late 1930s in southern or central Queensland, and the potential loss of POJ2878, were the final trigger.

The roles of growers, and to a lesser extent millers, were crucial in obtaining the necessary legislative changes. The push for statutory Pests Boards came from the sugar industry, not from Government, although BSES supported the idea from the early 1910s.

The need for Disease Boards was advanced by BSES pathologists from the late 1920s, and taken up by growers in some areas. The legislation to introduce Disease Boards, and then amalgamate Pests and Disease Control Boards, is often quoted as the major achievement of Arthur Bell, BSES Pathologist, Deputy Director, Director and finally SES Board member.

Chapter 3 The 1890s attempt to obtain legislation to control canegrubs

THE MASSIVE CANEGRUB epidemics of the early 1890s produced a widespread feeling amongst the affected farmers and millers that something had to be done to control the grubs, otherwise the pest could put them out of business.

Collection of beetles had been undertaken on a voluntary, and probably desultory, basis from the late 1880s in some areas. Other measures included destruction of grubs during land preparation by collection or exposure to native or domesticated birds, destruction of feeding trees for greyback beetles, and sundry minor matters. All this was to little avail.

However, glowing reports were received from Europe of campaigns which controlled an agricultural white grub pest by coordinated and widespread beetle collections over a period of a few years (S.J.T.C 4:227; 5:174). National and/or local governments in France, Germany and Denmark had spent large sums of money to buy beetles, e.g. 3,600 t of beetles were reputedly purchased in Denmark in 1887 alone. Would a similar campaign in sugar areas yield similar results? This at least would give the appearance of doing something positive about controlling canegrubs while awaiting new discoveries, even though there was some evidence from the earliest days that cast doubt on its efficacy.

The first coordinated local campaign apparently occurred in the Nindaroo-Habana area of Mackay in November/ December 1894, under the direction of Mr W. T. Paget of Paget Bros, Nindaroo Mill (SJTC 4:116, 226, 247). Approximately 7.5 tons of beetles were collected at a cost of £400 raised by voluntary subscriptions, with “the results in respect of the lessening of the grubs being most marked, but we cannot hope to entirely eradicate this pest whilst the destruction of the beetle is confined to, say, Nindaroo, Habana and Farleigh”.

The idea was supported by the Sugar Journal in an editorial in December 1894 (SJTC 3:246): “We would particularly draw attention to a feature of the case, which appears to have escaped serious attention. Whether dealing with grubs, or other pests incidental to cane cultivation, it is not fair or reasonable to expect individuals to bear the burden of eradicating the evils. Where districts are concerned the growers should

combine, and make a levy to defray expenses. Not only will this fairly distribute the cost of combating the pests, but it will give each grower an interest in ridding his fields. We hope before long that the necessity for combination for such purposes as this will be recognised.”

3.1 The Paget Proposal, 1895

In May 1895, Paget began to lobby the Queensland Government for legislation to control cane grubs and beetles, and perhaps other cane pests. He wrote to the two parliamentary members for the Mackay district; published his proposal in the widely read Mackay monthly ‘The Sugar Journal and Tropical Cultivator’ (S.J.T.C. 4:116–117, June 1895); and spoke at length to an Agricultural Conference initiated by the Pioneer River Farmers’ Association in September (SJTC 4:226–228, October 1895).

The Paget Proposal (SJTC 4:116–117; Tryon, 1896) was that special legislation be introduced to empower local bodies in sugar districts, created by it or recognised by it, to compel the systematic destruction of the grub pest. His suggestions included:

- Divisional Boards (Shire or Town Councils) should be the empowered authorities.
- Special rates for noxious pest, animal and weed destruction could be levied on the whole Division or any sub-division, with each portion having the option of refusing the levy.
- Government should subsidise the money raised on a £ for £ basis.
- Boards would fix the rate of payment for pest destruction, and appoint local receivers who would accept the beetles and other pests, destroy them and sign vouchers for payment.
- Boards would have the power to enter lands where owners would not destroy the beetles, and destroy them at the owners’ cost.

From the beginning, Paget was supported by a considerable group of farmers and plantation owners in his area north of the Pioneer River. The Sugar Journal also took up the issue in editorials and by giving it good coverage from its district correspondents. Resentment began to build up against those farmers and localities which refused to participate in beetle

collection. Since greyback beetles disperse widely prior to egg-laying, some collective action over a wide area was considered to be necessary.

Concurrently, possibly in liaison, the Herbert River Canegrowers' Association took active steps in June 1895 to petition the Government for legislation (SJTC 4:118). This would allow the different cane districts to form Boards which could levy a tax on all farmers in order to control the grub pest. They pointed to the example of Marsupial Boards in western grazing and cropping areas, which were formed to control kangaroos and other pests by levying a tax on properties.

Henry Tryon, the Government Entomologist, visited all grub affected areas in 1895, spending some time with Paget, and in July presented his extensive Report on the Grub Pest of Sugar Cane. This was not published by the Department of Agriculture until 1896 (Tryon, 1896), when sections on control methods were also published in the press (SJTC 5:91–93, 118–120, 145–146, 173–175).

Tryon's sections on Legislation (SJTC 5:173–175, August 1896) listed and discussed Paget's proposal, which he supported quite strongly. He wrote:

“the circumstances connected with the occurrence of this grub pest are so special, its ravages so extensive and severe, the demand for its destruction so general and urgent, the proposed method of dealing with it – by capturing the beetle – so eminently practicable, that an Act such as is sought to be submitted for parliamentary sanction might be passed ...”

Significantly, he added that “some measure of Government monetary assistance may be looked for to meet these special circumstances”. It is no wonder that publication of Tryon's report was delayed for almost a year!

3.2 Agricultural Conference, Mackay, 1895

The Pioneer River Farmers' Association called this Conference in September 1895 specifically to discuss ways to overcome the grub problem. It provided the opportunity for wide ranging discussions on Paget's proposal (SJTC 4:226–228).

The Herbert River Farmers' Association and the South Isis Planters' and Farmers' Association gave strong support. Letters from the Childers, North Isis, South Kolan (Bundaberg) and Jarvisfield (Burdekin) Farmers' Associations supported the purpose of the Conference.

Support also came from the local Mackay parliamentary member, canvassing the options open to the Government and the problems which could arise from opposition within the canegrowing community. In fact, many of the farmers who had not suffered from grub infestations, and landholders who were not growing cane currently, were opposed to the scheme.

A consensus was reached that the Divisional Board provided an adequate and cheaper structure for the scheme, obviating the need to set up district Boards on the lines of the Marsupial Boards. The following resolution (SJTC 4:228) was passed unanimously:

“That this Conference requests the Government, through the members for Mackay in conjunction with the member for Herbert River, to frame a Bill giving power to Divisional Boards in sugar districts to levy special rates for the destruction of the grub pest (especially in the beetle stage), each sub-division or portion thereof to have the option of refusing to levy the rate.”

3.3 The Campaign Continues, 1895–96

Debate continued on the subject. Controversy raged in several areas, as those currently unaffected by grubs objected strenuously to legislation which would make them pay to control the pest. Not unnaturally, Government prevaricated and did nothing.

The only chance for action during the imminent beetle flight season (October 1895–January 1896) appeared to be the formation of voluntary funds by those directly affected by grub attack.

The Sugar Journal castigated the Government for inaction in an Editorial in December 1895 (SJTC 4:279–280). A Herbert River Canegrowers’ Conference in February 1896 (SJTC 5:8) passed a motion similar to that of the 1895 Mackay Conference, urging Government to give Divisional Boards the power to deal with cane grubs “**and other pests**”.

Beetle flights were enormous over the late 1895 to early 1896 period in Mackay, Herbert and Johnstone areas. In Mackay alone, some 16 tons of beetles were caught and destroyed at a cost of £886, while £1,000 was spent in the Herbert and £208 in the Johnstone (SJTC 5:116–117).

The Pioneer River Farmers’ Association called another meeting in June 1896 to bring further pressure on the Government for legislation (SJTC 5:147–148).

The discussion was very lively at times, but eventually a motion similar to that of the 1895 Conference was carried. There was a very strong feeling that Governments should contribute. A further motion sought that: “in the event of the desired legislation (for control of grubs) not passing this session, the Government be requested to place £5,000 on the Estimates as an endowment on voluntary subscriptions for destroying the grub pest throughout the sugar districts.”

3.4 Government Subsidy Provided, October 1896

At last the pressure became too great and the Government acted, providing £1,500 as subsidy on funds raised by voluntary subscriptions (SJTC 5:225–226, October 1896). The Minister for Agriculture explained subsequently (SJTC 6:84) that the Government proposed to give increased powers to the Divisional Boards, but the Bill could not be passed in time in 1896. The alternative of Boards similar to Marsupial Boards would be more expensive and require another set of offices, accounts and people. The subsidy was offered as emergency aid for the 1896–97 beetle flight season only.

Central committees were formed in each of the Mackay, Herbert and Johnstone districts, as required by Government, and voluntary subscriptions were raised. The subsidy provided an endowment of 17/- in the £ raised. Between 50 and 60 tons of beetles were purchased, but large numbers escaped destruction.

The 1896–97 campaign again demonstrated the necessity for legislation, as farmers and landowners in some areas refused to participate by subscribing funds or by destroying beetles. Attempts to obtain the legislation continued.

Beetle flights in the 1897–98 campaign were again enormous, but Government subsidy appears to have been reduced, with Mackay quoting 6/- in the £. Large numbers escaped destruction when funds ran out. At some time during 1897 or early 1898, the Government apparently increased the powers of Divisional Boards, so that they could impose a levy on certain properties in order to finance the payment of a bonus on beetles and grubs collected (BSES 27th Ann. Rep.: 50 years of Scientific Progress). Little evidence was discovered on how many areas used this method.

For the 1898–99 campaign, the Government promised an increased endowment—elections were held about that time. However, the

epidemic which had seen vast numbers of beetles and heavy grub damage over the 1891–97 period came to a precipitous end. Few beetles emerged in any district from Mackay north.

Some years of relative freedom from serious grub attack followed, and the campaign for legislation collapsed. The arrival of BSES on the scene in 1900, with the hope of scientific advances in the short term, may have been a factor also.

Chapter 4 Legislation on Boards – 1916 aborted attempt to introduce compulsory levies and Boards for pest control

CANEGROWERS, THEIR LOCAL organisations and the Australian Sugar Producers Association (ASPA) intensified their lobbying of Government for a voice in the management of BSES and in the expenditure of levy funds, but to no effect up until 1915. Better control methods for several insect pests were a matter of particular concern in northern and central districts, and they agitated for something to be done.

BSES research on canegrubs really commenced with the appointment of the first entomologists in the 1911–1917 period. Canegrubs continued to cause very serious losses, however, despite the greater knowledge being accumulated. Voluntary boards operated to the best of their individual abilities, and had been subsidised on a 1:2 basis from BSES funds since the 1908–09 season (A.S.J. 2:409). However, many farmers saw no need to contribute funds to them. The idea of creating a statutory (compulsory) levy for pest control measures gained considerable support, and involved amendments to the S.E.S. Act.

In October 1915, a representative group met with the Minister for Agriculture at his request and presented several proposals. The Minister agreed to amend the Sugar Experiment Stations Act to provide for an additional compulsory levy for pest control measures—a major breakthrough for all concerned. The ASPA Council meeting in February 1916 carried a motion of support to “recommend to the Minister for Agriculture that contributions to local pest destruction funds should be compulsory in districts proclaimed infested” (ASJ 7:892–3).

However, when the Bill appeared in parliament, there was a major divergence of opinion between growers and the Minister as to what was requested and what was delivered.

The Amendment Bill provided for the creation of a fund to be used for the destruction of canegrubs and beetles; the payment of entomologists and other officers; the erection, maintenance and equipment of buildings and laboratories; the adoption of remedial measures for the suppression and prevention of pests of sugarcane; and the conducting of such enquiries, researches and investigations in connection with the grub pest as may be deemed necessary. The money was to be raised by compulsory levy on every canegrower within a proclaimed pest-infested area.

Significantly, the BSES 1916 Annual Report follows on from the above information with “It is proposed to erect such buildings on Crown land at Meringa ... about 2 miles from Gordonvale ... sufficient land has been reserved to carry out field experiments.”

BSES General Superintendent H T Easterby (letter of 3.7.22 to Under Secretary, Dept of Agriculture & Stock), stated that ‘the 1915 conference asked the Minister to create a fund to be used for the destruction of grubs and beetles, payment of entomologists and others, erection of ... laboratories, adoption of remedial measures ... researchs and investigations ... and considered that growers would be willing to pay up to 3^d per ton of cane to the fund. A Bill was accordingly prepared ... and passed by the Legislative Assembly ... but the ASPA adopted a hostile attitude and the Legislative Council appointed a Select Committee. Only 3 witnesses were examined ... the Bill was rejected by the Upper House, although the growers have been asking for such a fund for years past.’

A different picture emerges in short articles and Annual Conference reports of ASPA in late 1916 and early 1917 (ASJ 9:641–642, 720 and 861). In letters to the Minister, the ASPA secretary argued that the proposed amendments differed considerably from those requested at the 1915 conference, and some were in direct conflict.

In brief, the new assessment was to be open-ended at ‘not less than 1^d’ per ton of cane; all funds would be pooled with no guarantee that money raised in a district would be spent there; subsidy from the Sugar Fund was currently paid to voluntary boards, but would not be paid on any levy funds raised; the funds could be used for matters other than dealing directly with insect pests; and growers would have no input into expenditure of the funds raised by the levy.

The latter points hit a very raw nerve! Growers would be told to provide more money, but have no voice at all in the spending of it. The following quotes show the depth of feeling involved.

“I desire again to emphasise, as deeply as possible, that moneys raised in the past for dealing with insect pest destruction have always been administered by the growers themselves, who contribute such money. Whereas under the Amending Bill, it is proposed to wrest from these growers the administration of their moneys, and hand the same over to an official of your Department, who cannot on any grounds

claim that he has the necessary knowledge for the economic and effective expenditure of the money.”

“We note that the levy is not merely to be used for dealing with insect pests, but may also be applied to payment of (staff salaries), erection and equipment of buildings and laboratories ... and the doing of any other acts or things deemed necessary or expedient. This is going quite beyond what we asked of you, and gives the Director power to expend our money in whatsoever manner his sweet will may dictate. Is this fair? We are strongly of the opinion that it is not. This proposal ... revives what we have contended for years past—those who provide the money should have some voice in the expenditure of it.”

The Minister declined to make any alterations to the Amending Bill, which was passed by the Legislative Assembly. ‘Having failed to get any satisfaction from the Minister, the ASPA brought the matter under the notice of the Legislative Council (Upper House) who— notwithstanding that the Bill had reached the third reading stage— considered that it was of sufficient importance to hold up the measure until the merits of the whole subject had been investigated by a Select Committee.’

The Committee’s report recommended several amendments that addressed the ASPA complaints and was adopted. The Bill was then amended and passed by the Legislative Council, and sent back to the Legislative Assembly. The Minister declined to accept the amended Bill, which was rejected by the Assembly and then declared lost.

The proposed Legislative Council amendments relating to insect pest control were –

- Local Boards may be constituted by the Minister by proclamation in respect of any proclaimed grub-infested area.
- Membership of a Board will consist of three (3) members who must be canegrowers within the infested area, and who are to be elected by millowners and canegrowers within the area.
- Powers and duties of the Board shall be to take such steps within its area for the suppression and prevention of sugarcane pests as are deemed necessary or expedient.

- The local Board will decide what funds are needed, and shall advise the Minister.
- The Minister will be given the power to make an assessment for the individual Boards, the amount not to exceed 2.5d/ton of sugarcane received at sugar works within the proclaimed area.
- This assessment is additional to that levied for the Sugar Fund since 1901 at up to 1d/ton, and to an additional assessment of 0.5d/ton proposed for BSES work.
- Government will not be required to endow (subsidise) the moneys raised for local Boards, but will continue to endow Sugar Fund levies and the new BSES levy.

These amendments appear to be quite reasonable and farsighted in the light of what happened subsequently. Indeed, they appear to have acted as something of a model for later legislation. We can only assume that the politics of the day, whether sugar politics or party politics, prevented a reasonable compromise being achieved.

A great opportunity was lost, and it was another 6 years before these ideas could reach fruition.

Chapter 5 Legislation on Boards – 1923 S.E.S. Act Amendment introduces statutory Cane Pests Boards

LOBBYING OF GOVERNMENT continued at various levels after the 1916–17 legislation was abandoned, and the voluntary board system continued to operate. By 1922, the Mackay Cane Growers organisation was successful with its request to a new Minister for Agriculture that a compulsory levy be introduced to provide funds for cane pest destruction.

Easterby's letter of 3/7/22, quoted in part in the previous chapter, continued on with respect to the Mackay correspondence. "I am still of the opinion that such a fund should be created for the purpose of dealing with the grub menace. At the present time, the expense of investigation comes out of the Sugar Experiment Stations Fund, and we are not able to set by enough money to deal with this question in the measure its importance demands. We are also subsidising funds for the destruction of beetles and grubs by collection at the rate of 10 shillings for each pound expended."

The Amendment Bill was introduced in the Legislative Assembly in August 1923. The objects of the Bill had already been considered favourably by the Sugar Committee of the Council of Agriculture. The sugar industry and government also were in agreement on the Bill's provisions, unlike the situation in 1916. The Act Amendment, the first change in the original Sugar Experiment Stations Act of 1900, was passed with little delay and became law on 12 November 1923.

The reasons advanced by the Minister in introducing the Bill in the Legislative Assembly were:

"The Bill is to provide means for the systematic destruction of insect, animal or bird pests which injure sugar cane. To that end, the Minister will be empowered to declare any particular cane growing area to be cane pest infected, and to appoint a Board of five to deal with the cane pests in that area. The Board will be elected in the first instance by the canegrowers and millowners, the canegrowers to elect three and the millowners two members."

"The duty of these Boards will be to take all proper steps for the suppression and prevention of sugar cane pests within their respective areas, and for the carrying out of this duty each Board will recommend to the Minister each year a levy of not more than

3^d per ton on all sugar cane delivered at any mills within the area. This levy will be borne equally between the canegrowers and the mills, and all the money raised by this particular assessment in each year will be operated upon directly by the Local Board, and used by it in the suppression and destruction of cane pests. The Boards are to be elected every two years.”

It is very significant that this levy was to be borne equally by canegrowers and millowners, whereas subscriptions to voluntary boards came largely from canegrowers. Although millowners had contributed equally with canegrowers to the Sugar Fund since 1900, ie to the support of BSES and other matters of common interest, this introduced a new factor. Pest control on local cane farms was now to be considered as equally as important for the miller as for the canegrower. Nothing in the way of recorded objections from millowners was found.

It is also worthy of note that these levy funds would no longer be subsidised by the Sugar Fund. However, it was agreed that the Sugar Fund would continue to subsidise any voluntary funds which chose to continue rather than convert to statutory Boards. Interestingly, 15 voluntary funds had raised £3,712 in 1922–23 season, on which subsidy of £1,856 was paid by the Sugar Fund, both considerable sums of money in those days. See Table 11.3 for further information.

5.1 Details of the Amendments

These were succinct and to the point, and the basic methodology continued to be used into the 2000s. The major additions to the Act were:

- **Definitions.** “Cane pests” were defined as “Insect or animal or bird pests which detrimentally affect sugar-cane and which by regulations under this Act are defined and declared to be cane pests.”
- **Cane-pest Infested Area.** “The Minister may ... declare any area ... where sugar-cane is grown to be cane-pest infested. Any area so notified is herein referred to as a cane-pest infested area. The Minister may ... alter the boundaries of a cane-pest infested area ... combine two or more such areas ... abolish any such area.”
- **Constitution of Cane Pests Boards.** “A Cane Pests Board may be constituted by the Minister ... for any cane-pest infested area ... shall consist of five members ...

elected by the mill-owners of the area electing two members and the canegrowers of the area electing three members ... every such Board shall be elected for a period not exceeding two years ... time and mode of election ... shall be fixed by regulations (which) may provide for all or any matters or things necessary or convenient to enable such Board to conduct its business.”

- **Powers and Duties.** “... shall be to take all proper steps within their area for the suppression and prevention of cane pests.”
- **Levy.** “... the Minister may in each year make and levy an assessment of not more than 3d on every ton of sugar-cane received at any sugar works The amount of such assessment shall be determined by each Cane Pests Board ... upon receipt by the Minister ... he shall cause such monies to be transmitted to the Cane Pests Board of such area ... to be used in carrying out the powers and duties vested in them.”

5.2 Regulations under the Act

While an Act itself provides the principles, the Regulations under the Act provide the detailed recipes for carrying out the intentions of the Act. They also may be used to limit, for the time being, the broad statements in the Act, as we will see shortly.

Regulations under the SES Act 1900–1923 were first approved on 15 February 1924, three months after the Act Amendment was passed. They dealt entirely with the new Cane Pests Boards, with three quarters of the 29 Regulations concerned with the election of Board members and how they would run their meetings. In many respects, these remained unchanged up to 1990 when the SES Act was repealed. The 3 important matters covered were:

- **Constitution of Board.** While the Minister or BSES may have considered it desirable to set up a statutory Board in an area, canegrowers in the area could object and vote down the proposal. This provision had been agreed on earlier as some voluntary boards wished to remain voluntary, or were hesitant about the idea of ‘compulsory’ boards and government control until they saw how it worked out.

- **Schedule of Cane Pests.** The Schedule named the actual animals, birds and insects which were considered to be cane pests, and on which the Boards were entitled to expend funds and institute control measures. The initial listing of animals and birds consisted of rats, wallabies, mice and red bills (coots), while there was a range of insects including the major problem pests of cane beetles and grubs, and weevil and beetle borers.
- **Eradication of Cane Pests.** Where a cane pest problem existed on any land, Boards had the power to require the owner or occupier to take such eradication measures as it specified. There were provisions for penalties where no action was taken, recovery of costs, and for entry of Board members or staff onto the pest affected land.

5.3 Conclusions

This was a milestone in pest control in the sugarcane world, and laid the basis from which pest and disease control would evolve in Queensland over the next 70 years. Overall, the operative procedures showed a remarkable resemblance to those proposed by ASPA and rejected by a previous Minister and Government in 1917!

The sugar industry now had the means to address a major complaint on voluntary boards—some growers could no longer evade paying their dues. However, there was still no power to force irresponsible growers to clean up pest infestations allegedly affecting other growers—the other major complaint. This was not added until 1931.

But the new compulsory Boards were only as good as the people running them—a ‘good’ voluntary board could operate almost as well as a ‘good’ compulsory Board, and that applied to poorly run Boards in equal measure.

Chapter 6 Legislation on Boards – 1934 Act Amendment provides Special Levy for rat control, and the Liens on Sugar Crops Act is applied to Pests Boards

THE MAJOR PEST of sugarcane from the late 1800s was the canegrub. However, rats assumed an increasingly important place in a few mill areas, mainly those in the Herbert River district as detailed in previous chapters. By early 1934, rat populations and Weil's disease incidence reached a critical stage in the Macknade and Victoria mill areas.

Drastic control measures were called for as the number of Weil's disease victims escalated, while yield losses due to rat damage in sugarcane became more important. A 'Grand Plan' was hatched to eliminate the rat population in the Herbert, with most impetus from government and the Health Department. Funding was to come from state and local government and the sugar industry.

A considerable sum of money was required of the sugar industry, well beyond the resources of the statutory Victoria and Invicta (Ingham Line) Pests Boards and the voluntary Macknade Pest Destruction Board. These Boards were also required to attend to other cane pests, and the special campaign for rat destruction would require more funds than they held or could obtain.

6.1 1934 Act Amendment introduces Special Levy for rat control

The 1934 Amendment Bill was hurriedly introduced in late 1934 to allow funds to be levied from millowners and canegrowers in districts affected by rats, for the sole purpose of destroying those rats affecting cane fields and considered to be spreading Weil's disease. The Bill provided that the Minister could levy a special assessment of up to 3^d per ton on cane from approved rat-infested areas, to be paid in the proportion of two-thirds by millowners and one-third by canegrowers. It was made very clear that the levy would apply retrospectively to the 1934 cane crop, harvest of which was near completion, and could be applied to subsequent crops. This was a good indication of the importance attached to the rat problem by the Health Department and government.

The special assessment was levied on the 1934 crop on 22 December 1934, raising £3,800. This was quite a large sum in those days, and met the sugar industry's one-third share of the estimated £11,400 cost of the 1934–35 rat eradication scheme.

In the event, this was the one and only time that the special levy was used, although it remained in the Sugar Experiment Stations Act up to its repeal in 1991.

6.2 Liens on Sugar Crops Act amended to protect Pests Boards

Canegrubs were by far the most important cane pest in north Queensland. The best control method was the fumigation of infested cane fields with a solution of paradichlorbenzene in carbon bisulphide. This was a costly operation at £6-8/acre, a large sum in the financially troubled 1930s.

It was the policy of northern Cane Pests Boards to purchase the fumigant in bulk from overseas, and distribute it to the affected growers at a subsidised cost. As crop proceeds would not be available for many months, many growers were unable to make immediate payment. As grub control was of communal as well as individual benefit, “The Liens on Crops of Sugar Cane Act” was amended in 1933 to cover such debts to Pests Boards. The actual costs of fumigation and application were made a first charge against crop proceeds.

Chapter 7 Legislation on Boards – 1938 Act Amendment introduces statutory Disease Control Boards and improved disease control measures, and the 1941 Act Amendment amalgamates Pests and Disease Control Boards

THE CANE PESTS Boards and various voluntary boards proved to be very useful in the fight to reduce losses due to cane pests. The situation was quite different with regard to diseases, however, as we saw in Chapter 2. Gummy disease was a major problem in the 1920s and early 1930s, but North's research since the early 1900s for CSR (North, 1936) had shown how to control it. This required resistant varieties, clean plant sources, and some 'persuasion' or compulsion in implementing the control measures. CSR mills and technical field staff exercised considerable influence in their areas, while BSES pathology and extension staff put in a great deal of hard work in other mill areas. However, there were no 'voluntary disease boards' in existence to provide help, and Cane Pests Boards could not legally raise and expend funds for disease control.

7.1 1930 request for disease control powers

Agitation for better disease control measures, utilising the existing Cane Pests Board framework, began at some time in the mid to late 1920s. It is likely that some of this could be attributed to the work of A. F. Bell and other BSES pathologists, as well as to those who experienced the frustration of getting recalcitrant growers to adopt sound control measures.

In May 1930, a deputation from the Queensland Cane Growers' Council (QCGC) raised the matter with the Minister for Agriculture. It had been discussed previously with BSES Director Easterby, who was favourably disposed. QCGC recommended that the words "and diseases" be added to the word "pests" wherever it occurred in the SES Act. This would allow Boards to expend levy funds for disease control, which would greatly assist BSES and the Department of Agriculture.

The major thrust in 1930 came from the Innisfail district, where Cane Pests Boards were well organised. Each Board already employed an officer to assist and teach growers how to destroy pests. They considered that he had sufficient time to also help growers combat disease, and assist BSES in disease control experiments on farms. No mention was made of what would happen in districts where Cane Pests Boards had not been

proclaimed, but where diseases were a problem. No action was taken by the Government at that time.

7.2 Disease control legislation under other Acts

‘The Diseases in Plants Act’. This was introduced in 1916, but was re-written in 1929 to cover a wide range of situations and provide greater control powers. Sugarcane, like all other plants, was covered by it.

BSES pathologists had recommended in the late 1920s that quarantine districts should be set up for sugarcane within Queensland, to prevent movement of certain diseases. It was soon apparent that voluntary measures were inadequate to restrict movement of sugarcane generally, particular varieties, and diseases. Consequently, a proclamation was enacted in February 1930 under ‘The Diseases in Plants Act of 1929’, whereby nine sugarcane quarantine districts were set up. It was now illegal to transfer sugarcane from one district to another without first obtaining a permit from an Inspector. Individual quarantines were also set up in several districts or localities, prohibiting the outward movement of all sugarcane because of the presence of particular diseases.

Policing these quarantines was another matter altogether! Many growers were accustomed to obtaining planting material from wherever they wished, and a better awareness of the benefits of disease control had not penetrated to the grass roots yet. In practice, there were also considerable problems in obtaining the legal evidence to support a prosecution where an obvious offence had been detected. BSES officers (Inspectors under the Act) were few and far between, with only intermittent presence in many mill areas—more people in the front line were needed.

By 1936, it was evident that changes were needed in the generalised provisions of ‘The Diseases in Plants Act’ to make them sufficiently applicable to the special requirements of sugarcane disease control.

‘The Regulation of Sugar Cane Prices Acts’. There was no official system of variety control in Queensland until the 1930s, and growers could plant what they wanted. Some ‘variety kings’ were reputed to have 100 or more varieties on their farms, some of which acted as reservoirs of various diseases. There had been provision in ‘The Regulation of Sugar Cane Prices Act 1915’ to deduct a penalty for growing varieties disapproved by the Local Sugar Cane Prices Board, but

this had never been used. BSES recommended in the early 1930s that adequate disease control could not be achieved without control over the varieties allowed to be grown. This was accepted by the sugar industry and Government.

In December 1933, ‘The Regulation of Sugar Cane Prices Act’ was amended to provide for inclusion of a list of ‘approved varieties’ in the annual awards of the Local and Central Sugar Cane Prices Boards. The BSES Director was required to issue a list of approved varieties each year to each Local Board, and the Board’s list could only contain some or all of those in the Director’s list. Penalties applied to non-approved varieties supplied for crushing. This had considerable impact on the removal of the miscellany of susceptible and useless varieties held by many growers.

By early 1937, however, Bell reported that it was already beginning to lose its force (Assistant Director’s Report of 25/5/37 to BSES Advisory Board meeting): “... it was nobody’s job to see that this section of the award is enforced penalties become farcical in some cooperative mill areas when annual meetings vote for the refund of all penalties inflicted during the year”.

7.3 Preparation of the 1938 Amendment Bill

The time was now right for comprehensive legislation on disease control. Gummy disease was finally under good control in the south and reasonable control in the north, but Fiji and downy mildew diseases had loomed as major threats in the south and central districts.

The BSES Advisory Board (forerunner of the S.E.S. Board) met in June 1937 to discuss Bell’s recommendations that provisions of The Diseases in Plants Act be amended for sugarcane, and that a better system of variety control be set up.

By the end of 1937, it had been decided to incorporate relevant parts of The Diseases in Plants Act into the SES Act; specifically tailor these to the requirements of the sugar industry; make cane variety control an integral part of the SES Act; and rewrite and consolidate the existing SES Act 1900–1934. It is intriguing that the formation of Disease Control Boards was not on the agenda initially.

Consultation in May/June 1938 with the QCGC, Canegrowers District Executives, ASPA and other groups ensured that any contentious issues were settled amicably well in advance.

Indeed, an editorial in the Australian Sugar Journal called on Government to introduce disease control legislation as soon as possible (A.S.J 30:391–392). One matter which took some time to resolve involved who would fund the compensation payable for necessary destruction of non-diseased cane, and whether compensation should be paid for destruction of diseased cane.

It was agreed to incorporate these items in the Bill, but there were practical difficulties in implementation, eg how to determine the limitations of the ‘benefited area’ to be levied in order to obtain the necessary funds.

In a memo dated 12/7/38 (BSES files), BSES Director Kerr recommended to the Minister for Agriculture that the creation of Cane Disease Control Boards, along the same lines as Cane Pests Boards, would solve this problem neatly. He also advised that the creation of Pests Boards had been amply justified, and it would be logical to have similar Boards in respect of diseases. However, he would not recommend joint Pest and Disease Boards at present.

Serious pest and disease problems only overlapped in the Mackay area, and previous experience was that Pests Boards functioned best where they were charged with one specific responsibility, and did not fritter away their time and effort on other issues.

Concurrently, there were other pressures building for the urgent creation of Disease Control Boards in Bundaberg and other southern mill areas due to Fiji disease, and in Mackay due to downy mildew disease.

The Bundaberg District Executive made a formal request in early July 1938, after earlier verbal communications, and the Mackay District Executive followed later in July.

The BSES Advisory Board and the Minister readily agreed to the creation of Disease Control Boards. By early August, the wording of the Bill had been settled and it was ready to go to Parliament with full QCGC and ASPA support.

7.4 Cane Disease Control Boards created by the SES Act 1900–1938

The Act was passed by parliament quickly and came into effect on 27 October 1938. The major point, as far as this history is concerned, was the creation of Cane Disease Control Boards and the powers and duties assigned to them. However, much of the disease and pest control

legislation impinged directly on the work of the Boards and their staff, so some information will be provided on that also.

The chief features were:

- Sugarcane was excluded from the scope of The Diseases in Plants Act, and all powers were vested in the BSES Director and the BSES Advisory Board. Much of the text was taken directly from the Diseases in Plants Act, but was amended specifically to cover sugar industry situations.
- Queensland was divided into 10 sugarcane quarantine districts, movement between districts was prohibited without a permit, and proof of illegal transfer was simplified.
- Provision was made for declaration of quarantine areas under various conditions, with responsibility for breaches clearly set out.
- Provision was made for inspections of farms, fields, buildings etc, and treatment or destruction of any diseased or suspect cane.
- The BSES Director must issue an annual list of cane varieties approved for planting in each mill area, and these varieties could be cultivated for three years after the date of planting, even if subsequently disapproved. Substantial penalties applied to the growing, harvesting or milling of non-approved varieties, including BSES experimental canes which were obtained illegally.
- All cane grown in contravention of the provisions of the Act was automatically deemed to be diseased cane, and could be destroyed forthwith.
- Cane pest and/or cane disease infested areas could be declared by the Minister, after which Cane Pests Boards and Cane Disease Control Boards respectively could be constituted therein. The powers and duties of Boards were to take all proper steps within its area for the suppression and prevention of pests or diseases.
- Provision was made for the payment by Cane Disease Control Boards of compensation for destruction of cane.

- Provision was made for Pests and Disease Board staff to be made Honorary Inspectors under the Act, with right of entry on farms, premises and vehicles to inspect for diseased cane and destroy it if necessary.
- There were many other amendments made in the Act, mainly minor ones in Cane Pests Board procedures but including a maximum limit on levy rate for the first time.

7.5 1941 Act Amendment amalgamates Cane Pests and Disease Control Boards

Cane Disease Control Board operations produced excellent disease control results during the 1938–41 period. In fact, by 1941 there were eight Disease Boards as well as 12 Pests Boards, and several centres had both Boards operating independently and collecting separate levies. Since some of the duties and personnel were common to both Boards, it was obviously uneconomic to continue in this way.

The amendment provided for the constitution of a single Cane Pest and Disease Control Board to perform both functions. Existing single function Boards were automatically expanded, while separate Boards in a single area were amalgamated. This action had been strongly advocated by the sugar industry.

There were few real changes introduced—most were just consequential changes following from the amalgamation. However, the tenure of Boards was extended to three years from the two years in force since 1923; and the BSES Advisory Board was given the power to define what steps should be taken by Boards to control pests and diseases.

The amendment received assent in November 1941 and the dual purpose Boards came into operation on 1st April 1942, following elections for Board members for the next three year term.

These Act amendments were an outstanding advance from the point of view of disease control, and were unique in the world of sugarcane. They were a real milestone which laid the foundations for 60 more years of intensive and successful disease control operations.

Chapter 8 Legislation on Boards after 1941 – 1973 Act Amendment gives BSES representation on Boards, and sundry Act Amendments 1946–1983

THE MAIN STRUCTURES of Cane Pest and Disease Control Boards had been put in place by the 1938 and 1941 Act Amendments. However, there was much fine tuning still to be done on operational matters—some additional powers and duties were given to Boards; and Act amendments were made to clarify the text or to take account of changing legal and judicial interpretations. Examples of these changes are given later in this chapter. Most importantly, however, the lack of BSES representation on Boards had to be remedied.

8.1 The 1973 amendment – BSES representation on Boards

Cane Pests Boards were established in 1923 as purely local organisations controlled by local growers and millers, but raising money through a State Government levy. There was minimal control exercised over the Boards by Government and BSES, despite their statutory status, except that Board accounts were audited.

By the mid-1930s, it was quite apparent that some statutory (and voluntary) Boards were acting efficiently while others were not. Boards generally had no members with adequate technical knowledge, so BSES staff considered that employment of an efficient and knowledgeable Field Supervisor by Boards was the key to success, provided Board members were prepared to accept his recommendations. In some areas, “it seems that Boards were diametrically opposed to BSES recommendations, and it appears that the only way to overcome this is by appropriate legislation. ... the ultimate aim of BSES should be to have control over, or adequate representation on, Pests Boards” (R. W. Mungomery, memo to Director, 5/7/35).

This was probably too radical a concept for the 1930s, but the Minister and BSES were given more powers and influence over Boards in the 1938 Amendment and the subsequent amendments to the Regulations. Many Boards always cooperated fully with BSES and operated effectively through the 1941–1970 period without any need for coercion.

However, some Boards resented BSES or Ministerial ‘interference’ in their affairs, and were loath to invite the local BSES officer to attend meetings in an advisory capacity.

Personalities on Boards, usually abetted by a weak supervisor, were the main cause of such problems.

In 1970–71, the S.E.S. Board discussed at length a proposal to amend the Act to provide a sixth member on each Board (a local BSES officer) with voting powers on all matters concerning pest and disease control. Government was agreeable, provided the sugar industry agreed. The Proprietary Sugar Millers' Association (PSMA) and ASPA agreed in principle, but QCGC was opposed. The proposal was shelved for the time being.

Within a year, however, the arguments for BSES technical input at Board level had been boosted dramatically by upsurges in Fiji and leaf scald diseases at Bundaberg and Mackay respectively. Sugar industry organisations were approached again in late 1972. They unanimously supported the amendment, provided that the BSES member did not vote on levy rate or election of chairman.

The Amendment Bill received assent on 11th April 1973, but it was not until early 1974 that a BSES officer was appointed as a member of all 21 statutory Boards in Queensland. The appointee was B T (Brian) Egan, a BSES plant pathologist of long standing who had worked with most Boards on disease control campaigns. His BSES designation was 'Coordinator of Cane Pest and Disease Control Boards', with the goal of visiting each Board twice per year.

In 1976, an Act amendment empowered the Director to appoint a proxy for the BSES member when he was unable to attend Board meetings. In practice, the proxy was the local BSES Extension Officer who normally attended meetings. The objective of BSES technical and local representation on Boards had at last been met.

8.2 Miscellaneous changes, 1946–1983

In 1946, Boards were given the specific power to pay subsidies on purchase of fumigants, rat baits, chemicals, materials, services etc, even though they had been paying subsidies since the 1920s. Several other examples could be given of the validation of actions previously taken in good faith under general provisions in the Act, but subsequently regarded as questionable as legal interpretations became tighter.

From 1923 to 1954, levies gazetted for Boards had been paid by mills to the Minister, or to the SES Board after 1951. It was then remitted to the particular Board. This cumbersome procedure was changed in the

first Act Amendment after BSES was made a Statutory Authority in 1951, with payments going directly from mill to Board.

In 1957, the brief provisions relating to the abolition or amalgamation of Boards were greatly expanded to cover all eventualities of such an action, including how assets should be distributed. This amendment was precipitated by the desire of Invicta (Ingham Line) and Invicta (south of Townsville) Boards to amalgamate for more efficient functioning and reduction in administrative costs. In addition, the definition of cane pests was broadened to include plants as well as insects, animals and birds. Boards could thus spend money to control the serious giant sensitive plant outbreaks in north Queensland.

In 1965, Boards were given specific power to establish superannuation funds for staff, although several were already doing this under the general provisions.

In 1976, Boards were empowered to invest their funds in a range of specified securities, to cover procedures used by several Boards over the years.

In 1983, members and staff of Boards were exempted from liability at law for actions taken for the purposes of the Act, provided they were in good faith and without negligence. Of course, the Boards remained accountable for all actions. At the same time, the Regulation-making powers on Boards were spelt out in as much detail as possible in order to cover every aspect of Board activities. This was seen as undue interference by some Boards and members. In fact, it was intended to overcome some of the earlier problems which arose when changing legal opinions suggested that there was no specific power in the Act for Boards to perform certain functions.

The 1983 amendment was the final one affecting Boards made under the SES Act 1900–1983, which was repealed in 1991.

**Chapter 9 Legislation on Boards – Sugar Industry Act 1991
repeals the S.E.S. Act 1900–1983, and sets up Cane Protection and
Productivity Boards in place of CPDCBs.
The Sugar Industry and other Legislation Amendment Act 2003
provides for dissolution of all statutory CPPBs by 30 June 2004.**

PRODUCTIVITY BOARDS STARTED to be set up in some areas from the early 1970s, as a grower-miller initiative and with BSES input, to help raise overall yields, productivity and hence economic returns. Pest and Disease Control Boards were divided on the issue of whether they should become involved in these, but in any case were prohibited from spending any funds on productivity functions unless related to pest and disease control. Most were not in favour, but the proposal was debated over the 1976–1980 period, then dropped.

The Sugar Industry Review Program (SIRP) was set up by government in 1984 to examine the whole industry and recommend changes. This started a seven year period of turmoil for Boards, which generally supported retention of their present autonomous form. The Sugar Industry Working Party (SIWP) initially suggested in 1985 that they be absorbed by BSES, but then recommended in 1988 that the Powers and Duties of Boards be expanded to incorporate all productivity functions.

This was legislated in the Sugar Industry Act 1991, and Cane Pest and Disease Control Boards(CPDCB) became Cane Protection and Productivity Boards(CPPB) in July 1991. They were given additional powers to work on, and give advice on, all cane productivity matters, as well as retaining the existing powers on controlling pests and diseases. There were of course some ‘devils in the new details’ on how CPPBs and inspectorial staff were to operate, but these will not be covered in any detail here.

Basically, CPPBs **could** now work on any aspect of canegrowing, and **could** provide advice and assistance to growers **as they saw fit**. They were **required** to (i) assist and cooperate with BSES in research concerning the growing, harvesting and processing of cane, and (ii) provide advice on sustainable cane culture and in reducing environmental damage.

Almost all the pest and disease control legislation in the S.E.S. Act was deleted, and the sugar industry was to be treated in the same way

as all other primary industries. BSES and CPPBs now had to rely on provisions of the Plant Protection Act for their power to act on any pest and disease control matters. Ultimate power under the Plant Protection Act was held by the Minister for Primary Industries, where previously it was held by the SES Board, and CPPB staff were given more limited inspectorial powers than previously.

The new system worked well enough in the 12 years that CPPBs existed, in large measure because existing canegrowers were used to operating under the previous system.

However, much greater change occurred in 2003 when the Sugar Industry and Other Legislation Amendment Act was passed. Chapter 10, Part 3 of the SIA was amended by insertion of a new “*Division 3 – Automatic Dissolution of cane protection and productivity boards if no replacement entity.*” Boards were to be privatised, and would be dissolved automatically on 30 June 2004 if a private replacement entity had not been set up.

Boards were required to set up a suitable replacement entity for approval by the minister. On the set transfer day from statutory Board to the new private entity, all assets and liabilities would also be transferred. This privatisation of Boards also meant loss of statutory levies and a return to voluntary funding.

After almost 80 years of statutory CPBs, CDCBs, CPDCBs and CPPBs with statutory levies, the sugar industry reverted to voluntary bodies and voluntary funding. The wheel had turned full circle!!

Chapter 10 Subordinate Legislation on Boards – Regulations under the S.E.S. Act, and the associated Powers and Duties of Boards

THE SES ACT, after amendment in 1923, provided the heads of power for areas to be declared as cane pest infested, for Cane Pests Boards to be appointed therein, and for the Minister to make a levy on behalf of Boards. Other Act provisions included:

- defining cane pests as ‘insect or animal or bird pests which detrimentally affect sugar cane’ and which are declared as pests by regulations.
- The powers and duties of a Cane Pests Board shall be to take all proper steps within their area for the suppression and prevention of cane pests.
- Regulations may be made on all or any matters or things necessary or convenient to enable a Board to conduct its business.

The Act provides the power and some prescription, but the Regulations are the chief means for prescribing how the functions or work are to be carried out. An advantage is that they can be amended readily by government without having to amend the Act in parliament.

Complete sets of Regulations under the SES Act were issued and published in the Government Gazette on only four occasions, and can be found there on the relevant date. These were the original set for Cane Pest Boards on 15 February 1924; the set of 7 February 1935 which added BSES matters but merely consolidated Pests Boards items; the expanded set on 2 March 1939 after the 1938 Act Amendment introduced strong disease control measures; and the set of 30 May 1987 which consolidated the many changes and additions made to the 1939 set.

The relevant updated Regulations can also be found in the three consolidations of the Act, Proclamations and Regulations, which were produced at 10-year intervals from 1942 to 1962, but not subsequently. These were for:

SES Act 1900–1941	(compiled to 1/4/42)
SES Act 1900–1952	(compiled to 31/7/52)
SES Act 1900–1959	(compiled to 8/8/62)

10.1 Regulations issued 15 February 1924

Of the initial set of 29 Regulations, 28 dealt with the election of members, meeting procedure, power to appoint staff and rent offices, and

how to object to the setting up of a statutory board. The remaining one defined cane pests as:

Animals	<i>rats, wallabies, mice.</i>
Birds	<i>red bills or coots.</i>
Insects	<i>cane beetles, cane grubs, moth borers, weevil borers, beetle borers, bud moths, plant bugs, wire worms, grass hoppers, locusts, army worms, sett eaters, white ants, caterpillars, plant-eating beetles, leaf hoppers, plant lice, mealy bugs.</i>

(NB: Subsequently, kangaroo rats, foxes and wild pigs were added to the animal list in 1926, 1928 and 1932)

Legally, Boards could expend money on any pests named in the Schedule. In practice, however, Boards devoted most of their time and funds to the suppression and prevention of cane beetles and grubs until the 1930s, with rats becoming an increasing problem in many northern districts from the late 1910s.

In retrospect, it seems strange that virtually no controls were placed on the operations of these new Boards, except for the Minister having power to examine the accounts. The major thrust of the Act Amendment, as far as the sugar industry was concerned, was to obtain **compulsory** payment of levies for existing Boards. If they had to change status to compulsory (ie statutory) Boards to get the funding, so be it. In this context, and given the small staff numbers in BSES, it is understandable.

However, by the early 1930s it became apparent that some ‘teeth’ were necessary for Boards to enforce certain pest control measures, and that they needed to become more accountable. Two more regulations were added to cover these, in March 1931 and March 1934 respectively.

Regulation 30 gave Boards the power to enforce control measures, and to carry out the work themselves if necessary, recovering costs later. This was an important advance for pest control and for Boards. It answered a major complaint of many canegrowers, that some growers failed to control canegrubs and rats which became a menace to the locality.

Regulation 31 was the first real step towards greater accountability of Boards, financial and otherwise. A Register of Transactions had to be kept, and could be inspected by anyone. This

lessened the possibility of ‘sweetheart deals’ for mates in the provision of services or cost of fumigants, which apparently did happen at times in some voluntary and statutory Boards.

10.2 Regulations issued 2 March 1939

The 1938 Act Amendment Act set up Cane Disease Control Boards, took away the right of canegrowers to object to formation of a Board, made several major changes on accountability, and provided for the appointment of Honorary Inspectors under the Act, with the intention that Board Supervisors should be so appointed. Consequently, Regulations had to be expanded greatly to take account of these matters, increasing the Section devoted to Boards from 31 to 58 individual regulations. Most Boards were happy to comply with increased accountability, even though they thought it involved a lot of red tape. But a few had become almost a law unto themselves, and wanted no ‘interference’ from BSES or Government.

The five regulations on objections to constituting a Board were deleted, as was the regulation empowering Boards to issue eradication orders on growers. The method for election of Board members was prescribed in considerable detail, with 22 regulations in place of the previous two. Procedures on Board meetings, voting, minutes and vacancies were expanded where necessary, but numbers were actually reduced from 22 to 18.

Financial accountability: This was increased greatly for Boards with nine regulations in place of the previous one. The Register of Transactions was continued; there were seven detailed and lengthy regulations on books and system of accounts and auditing; and the chairman of the Board was required to prepare an annual report and send a copy to the Minister. These items were long overdue. They became a necessity with the large number of Boards constituted over the next 10 years, and the large increase required in levy funds—effectively these were public money, **not** industry money as some thought.

Of the remaining eight regulations, five dealt with the possible payment of compensation for destruction of non-diseased sugarcane in certain circumstances. The power to rent offices and appoint staff was retained, while the power to buy or hire equipment was added.

Reporting: The final regulation introduced the concept of Boards being required to report on certain things, in this case on new or existing

diseases as required by the Minister, as shown below. Accountability on matters other than financial was to be improved also.

Honorary Inspectors: Henceforth, BSES or the Minister would issue all orders rather than Boards, but the Board staff needed access to farms and premises to make inspections. The concept of Honorary Inspectors was introduced under the Sections in the Regulations dealing with disease control.

Once supervisors and some other staff were appointed, they could no longer be denied access, as had happened in the past. This was particularly important in the fight current at that time against Fiji and downy mildew diseases. For the first time also, Boards and staff had to report to the BSES Director rather than the Minister. BSES was part of the Department of Agriculture and Stock at that time so the distinction had some significance—it marked the beginning of the move to make Boards accountable to the Minister **through** BSES and its Director.

10.3 Regulations issued from 1939 to 1987

Only minor cosmetic changes needed to be made to Regulations in 1941 when amalgamated Boards were set up. Many other minor changes were made up to 1987 but only a few were significant. These were:

- Restrictions on the voting of the BSES officer member were gazetted in 1973, making him ineligible to vote in the election of a chairman and deputy chairman, and in determining the amount of levy.
- Giant sensitive plant was gazetted as the first plant cane pest in 1958, with itch grass added in 1982.
- All native animal and bird fauna were removed from the Schedule of animal and cane pests over the 1973–75 period. The Fauna Conservation Act 1974 extended protection to all native animals and birds, even when they were pests, and superseded all other Acts. The only gazetted animal cane pests were now foxes, wild pigs and hares.
- The Powers and Duties of Honorary Inspectors, if employed as supervisor or inspector by a Board, were increased several times. They were authorised in 1966 to

issue sterilisation orders on any cutting implement to limit spread of RSD; in 1975 and 1979 to inspect and issue permits authorising the use of plants, where compulsory inspection of designated plant sources had been introduced by Boards; and in 1984 to issue permits for the removal of cane and machinery from areas quarantined due to itch grass presence.

10.4 Regulations issued 30 May 1987

One of the many legislative changes in the 1980s was the Regulatory Reform Act 1986, which provided for automatic revocation in June 1987 of Regulations more than 10 years old. The old SES Act Regulations had become quite confusing due to the many amendments since the 1962 consolidation. Fortunately the Pest Board section did not require a lot of changes. Nine relating to Board meetings and another nine on financial accountability were deleted as redundant, with the latter covered under the Financial Administration and Audit Act.

These Regulations remained in force until the SES Act was repealed and replaced by the Sugar Industry Act in 1991.

10.5 Powers and Duties of Cane Pest and Disease Control Boards

The SES Act section 31 defined the Powers and Duties of a Board as ‘to take such steps for the suppression and prevention of pests and diseases as the Minister determines, on the recommendation of the SES Board’. Several sub-sections added over the years provided legislative power for various administrative matters, eg paying subsidies on chemicals and operations; paying compensation for cane destruction; investing or borrowing money; employing staff and paying salaries, fees, allowances and costs of running the Board; maintaining proper books of accounts and sending an audited, itemised statement to the Minister annually.

Until 1954, nowhere in the Act or Regulations were these ‘steps for the suppression and prevention of pests and diseases’ set down. Logically, Boards should have a list of all possible actions which they could take. The S.E.S. Board had a draft paper prepared by BSES staff, defining the ‘steps’ which could be taken. This was considered by the Department of Agriculture and Stock and the sugar industry organisations. The final document was accepted by the Board in mid 1954 and recommended to the Minister for determination.

The first Powers and Duties of Cane Pest and Disease Control Boards was issued as a Directive by the Minister on 1 September 1954. The second Ministerial Directive was issued on 8 August 1962, with some amendments. This can be found in the consolidated SES Act 1900–1959, including Proclamations and Regulations, plus Powers and Duties of Boards, all compiled to 8 August 1962.

The third and final Ministerial Directive was issued on 1 April 1977, containing several new items as well as revisions. Further amendments were made into the late 1980s, but no consolidated set was ever issued.

Over the 1954–1991 period, the Directive set a framework within which the Boards could act. The provisions varied over time but included:

- carry out farm surveys as required.
- enter any land and search for cane pests and diseases; if located, dig out or destroy diseased cane, apply pesticides or lay baits, as appropriate.
- purchase approved pesticides and materials, as specified in the Schedule, for resale to canegrowers.
- make subsidy payments on pesticides, materials or services for destruction of pests and diseases, but only on those items specifically approved herein.
- carry out any experimental work deemed necessary for control of pests and diseases, with the Director's approval.
- provide advice on matters of pest and disease control, and assist growers to obtain suitable planting material.
- establish sources of disease-free planting material, which may be sold to canegrowers.
- pay a bonus up to a set maximum on cane pests (only on feral pigs, foxes and hares after 1975).
- pay compensation to growers on certain cane or host plants destroyed in the interests of disease control.
- pay meeting fees and travelling or transport allowances to Board members and staff, up to prescribed limits.
- pay salaries or wages of staff, not exceeding the maximum of the relevant approved scale.

- Schedule 1 listed the approved pesticides, chemicals, machinery and materials.

Overall, these Powers and Duties were accepted by most Boards as useful for their work. Most arguments arose over money—the rates approved for fees and allowances were always too low, while staff salaries were set too low for a few and too high for a few others. Another complaint from a few Boards, particularly in the 1980s, was that they should be allowed to do some other productivity work also.

10.6 Conclusion

In retrospect, but from our current perspective, the Regulations and Powers and Duties might appear to be too bureaucratic and restrictive on Boards, but it fitted those times. Opinions have changed on many things since the system was first devised and expanded, eg in the body of law and legal interpretation, and in government, expert and even public thinking.

However, it must be remembered that all funds were public funds legally, not just sugar industry money as some maintained despite legal advice. There had to be rules governing how it could be spent within the bounds of the SES Act. Also, it was not until the late 1980s that strict new administrative requirements were introduced by Government in the Financial Administration and Audit Act.

Chapter 11 The Voluntary Pest Destruction Fund System

LOSSES FROM CANEGRUBS reached epidemic proportions in the 1890s, threatening the prosperity of the sugar industry in major parts of the central and northern district, as noted in earlier chapters.

Beetle collection seemed to be the only possible control method for wide-scale use. Because of the wide dispersal of greyback beetles before egg-laying, it was obvious that efforts by individuals or small groups of farmers were useless. Some collective action over a wide area was thought to be needed, and the attempt to get legislation for this was documented in Chapter 3.

11.1 The Origin of Pest Boards

The first coordinated campaign was in the Nindaroo-Habana-Farleigh area of Mackay in November/December 1894 (SJTC 4:226–227). This was promoted by Mr W. T. Paget of Paget Bros, owners of Nindaroo Mill and the associated plantation, and involved other farms in these localities. £400 was raised by voluntary subscriptions, the majority from Nindaroo, and 7.5 tons of beetles were killed.

The idea was supported by the Sugar Journal in an editorial in December 1894 (SJTC 3:246): “we would particularly draw attention to a feature of the case, which appears to have escaped serious attention. Whether dealing with grubs, or other pests incidental to cane cultivation, it is not fair or reasonable to expect individuals to bear the burden of eradicating the evils. Where districts are concerned the growers should combine, and make a levy to defray expenses. Not only will this fairly distribute the cost of combating the pests, but it will give each grower an interest in ridding his fields ... We hope before long that the necessity for combination for such purposes as this will be recognised.”

11.1.1 The 1895–96 Campaign

A number of other mill areas decided during the September–October period to take up the idea for the 1895–96 beetle flight season, as there was no movement by the Government on legislation. Documented actions included:

- **Johnstone River.** CSR and Goondi Estate canegrowers agreed to levies of 1/- per acre on 1,000 acres of CSR cane and 6^d per acre on 2,800 acres of growers' caneland, while CSR subsidised the latter at 2:1. This raised £470, and a

committee and receivers were appointed to pay for beetles at the rate of 1/- per 100 (SJTC 4:232). Presumably this occurred.

Johnstone River Farmers' Association also levied funds and spent £208, but farmers felt that the small quantity killed in such a large area was useless (SJTC 5:177).

- **Herbert River.** Halifax canegrowers agreed to a 1/- per acre levy on their 1,500 acres of caneland. The Macknade and Ripple Creek plantations were invited to cooperate, and CSR apparently agreed to enter into the same arrangement as at Goondi (SJTC 4:257).

There is little information available on results. Halifax centre had paid out £240 by mid-January, with enormous numbers collected at Macknade and Ripple Creek (SJTC 5:8). W. T. Paget noted in his report on Mackay data that “not less than £1,000 was spend on the Herbert River this year” (SJTC 5:117).

- **Mackay.** Nindaroo and Habana mills subsidised subscriptions for their surrounding farmers, as well as paying for their own lands, to form a fund. Homebush farmers also set up a fund for the first time, and it can be inferred that the mill owner (CSR) subsidised it (SJTC 4:257). CSR did subsidise funds raised by their tenant farmers in 1896, at 6^d per 1/- subscribed, and agreed to continue as long as farmers paid (A Century of Sugar Racecourse Mill Mackay, 1988). Farleigh Estate and farmers set up a fund at some stage, and Mackay Municipal Council decided to purchase beetles within the town area.

A total of 16 tons of beetles (approximately 8.9 million) were purchased at a cost of 6^d per lb before the subscribed funds (£886) were exhausted (SJTC 5:116–117).

Overall, more than £2,500 was spent in the three districts on buying around 38 tons of beetles, equivalent to at least 21 million beetles! And many more than that escaped!

11.1.2 The 1896–97 Campaign

Groups within the three districts were gearing up for another effort when the Government announced a subsidy of £1,500 for the

imminent beetle flight season. The regulations stipulated that funds could only go to central committees to be set up in each district. These were quickly established by the sugar industry, and over £1,750 was raised by voluntary subscriptions. This allowed a subsidy of 17/- per £1 raised, for a total of £3,250 (SJTC 6:25). A fuller account of the subsidy position can be found in a later section of this chapter.

Records are somewhat sketchy and inaccurate, unfortunately (SJTC 5:287; 6:7, 30, 36). Mackay is said to have raised £723, and with subsidy (some of it too late to use) would have collected at least 20 tons of beetles. The Herbert raised well over £500 and collected some 24 tons of beetles, while Johnstone raised over £400 but no reference could be found to beetles collected.

Overall, it is likely that well over 50 tons of beetles were collected this season, a total of at least 28 million and possibly 30 million. And still the industry complained of the greater numbers that escaped!

11.1.3 Subsequent campaigns in the 1890s

For the **1897–98 campaign**, little documentation could be located (SJTC 7:150)—perhaps a sign that interest was waning. Beetle flights were again enormous, but Government subsidy was reduced to 6/- per £1, a very sour point with the farmers.

In Mackay, £500 was subscribed and probably 10 tons collected. In the Herbert, “there is plenty of money available” and large numbers of beetles were being caught. In the Johnstone, over £600 had been spent by mid-December and a further levy was raised by Goondi farmers.

The **1898–99 campaign** saw an increased Government subsidy available, following recent elections. The central committees mobilised for action but this grub epidemic had finally run its course. Mulgrave Mill had offered 1/- per lb but received only 20 lb of beetles, while Johnstone reported far fewer beetles and very few grubs seen while ploughing (SJTC 8:178). No information on beetle flights was located for the Herbert. In Mackay, beetles were far from numerous resulting in greatly diminished catches. “Whether it is that they have been greatly reduced by the efforts of previous years, or that the long dry weather prevented their hatching out, I do not know” (SJTC 8:178, 205).

11.2 Evolution of the Voluntary System

By 1898, it was obvious that Government would not legislate for special Boards to control canegrubs, similar to the Marsupial Boards for

macropod control, and with power to raise funds by levy. It increased the powers of Divisional Boards (Shire Councils) to impose levies on certain properties in order to finance payments for beetle and grub collection, but this was not widely used for some reason. Perhaps this was due to objections by landholders who did not grow sugarcane or who were little affected by grubs. In addition, Government decided to continue the subsidy payment on funds raised for grub control (see Section 11.4), although this had been introduced in 1896 as an emergency measure only.

Growers and millers apparently decided to push ahead with the Voluntary Fund system, and this spread into nearly all areas where canegrubs were a major problem. The efficacy of collecting beetles and/or grubs was supported by anecdotal evidence from Mackay and north Queensland, Henry Tryon's report of 1895, and CSR's field staff and management. There really was no alternative method, and it at least gave the appearance of doing something to control a horrendous problem.

Unfortunately, nearly all records of the early Voluntary Funds have been lost or destroyed, or are buried in old reports or files. The 34 Funds which have been identified are listed in Table 11.1 in chronological order of establishment, and Table 11.2 in geographical order from north to south. It is certain that more Funds existed than these 34. For example, McDougall (1938, 1946) told Pest Board Conferences that he had inspected old cash books of the various voluntary funds (unspecified) previously functioning in Mackay area, but only two are listed here.

All but two of the Voluntary Funds were set up primarily for grub control, although some soon added rats and other insect/animal pests to their list. The only two set up specifically for pests other than canegrubs were **Cassowary** Rat Pest Destruction Fund (pre-1922) and **Miallo** RPDF (pre-1927). Both were incorporated into Mossman Cane Pests Board when it was set up in 1932.

The evolution of the Voluntary System is presented briefly below, and further information is given in Chapter 16 (History of Individual Boards).

1895. The first organised Funds were established but only **Goondi**, **Macknade**, **Ripple Creek**, **Halifax** and **Homebush** are listed since they continued to function later. Mills such as W.T. Paget's **Nindaroo** set up a fund in 1895, but there is no evidence of its continued existence after Mackay Fund was set up in 1896.

- 1896. Johnstone River, Herbert River and Mackay** Funds were established to cover the whole of each district, in order to obtain Government subsidy.
- 1897. Isis** Fund was established—the first in south Queensland, and the first set up to control grubs other than greybacks. **Mourilyan** Fund was established, splitting from Johnstone R fund when a centralised one was no longer a pre-requisite for subsidy.
- 1898. Mossman, Hambledon, Mulgrave and Proserpine** funds established, although some collecting probably occurred in the first two areas before this. Proserpine is the only area where records from the early days are still held.
- 1900–1910. Cairns District Canegrowers (1909)** is the only one in this group for which a definite date of establishment is known. The other eight Funds were noted as operating in a particular year, but could have (and probably had) operated for several years before that. They are **Plane Creek (<1907); Fairford, Gairlock, Gairlock North, Hawkins Creek, Stone River and Victoria** in the Herbert District (<1909); and **Childers Mill (<1910)**.
- 1911–1923. South Johnstone** was formed in **1916**, with indefinite dates for **Lannercost (<1915), Babinda(<1920)** and **Cassowary (<1922)**. The last was set up for Rat Pest Destruction, and was one of only two Funds not primarily established for grub control.
- 1924.** The first new Statutory Pests Boards were set up in 1924 (see Chapter 12). This started a decline in the number of voluntary Funds, although only two (**Mackay, Plane Creek**) were terminated in 1924.
- 1925–1933. Miallo**, the second known Rat Pest Destruction Fund, was formed before **1927** as it received subsidy then but not in 1922. **Forest Home and Upper Stone River** operated before **1929** but may have been relatively recent Funds as they are not recorded as receiving subsidy in 1922 or 1927. The new **Hambledon, Mulgrave** and **Isis** Funds were all set up in 1931 to replace previous Funds, for various reasons. However, six Funds were terminated, mainly when statutory Boards were formed at Mossman and South Johnstone.
- 1934.** The last two voluntary Boards were formed in 1934, partly or wholly in answer to the increasing numbers of statutory Cane

Pests Boards. **Macknade Pest Destruction Board** amalgamated the six small Funds in that mill area, at CSR's urging and with its active help. **Hambledon Cane Pest Board**, like Macknade, was modelled on the Goondi Fund which had operated successfully for a long time in that CSR mill area. However, a total of 13 Funds were terminated, six at Victoria and one at Isis when statutory Boards were formed, plus the six at Macknade.

Post 1934. Only seven voluntary Funds remained after the big shake out in 1934—Hambledon, Goondi and Macknade in CSR mill areas, plus Mulgrave, Babinda, Mourilyan and Proserpine.

Mulgrave, Babinda and Proserpine were closed when CPDC Boards were set up in their mill areas in 1942, 1952 and 1953 respectively. **Hambledon** closed in 1960 when the farce of having parallel voluntary and statutory Boards became too much trouble to continue. The remaining three voluntary Boards were assured by BSES that, as long as they operated in a satisfactory manner, they would not be forced to convert to statutory Boards.

Mourilyan became a statutory Board in 1975 when the Mill refused to subsidise grower contributions any longer, since funds were being used to subsidise insecticide applications. **Goondi** closed in 1987 when CSR sold the mill and the area was divided between Babinda and Mourilyan. **Macknade** remained a voluntary Fund to the end in July 1991, but closed on 31 March 1993 when it amalgamated with Victoria Board to form the Herbert Cane Protection and Productivity Board.

AND SO ENDED THE VOLUNTARY SYSTEM AFTER 98 YEARS IN EXISTENCE. But who could have predicted that ALL boards would be forced to move to voluntary funding in 2003?

Table 11.1—Voluntary Pest Destruction Funds listed by actual or Inferred years of establishment.

1895	Goondi Beetle and Grub Fund
	Macknade Beetle Destruction Fund
	Ripple Creek Beetle Fund
	Halifax Planters Club Pest Destruction Fund
	Homebush Mill Beetle Fund
1896	Johnstone River Grub Destruction Fund
	Herbert River Pest Destruction Fund
	Mackay Insect Pest Destruction Fund
1897	Isis Grub Pest Destruction Fund Mourilyan Beetle Fund
1898	Mossman Insect Pest Destruction Fund
	Hambledon Beetle Fund
	Mulgrave Mill Beetle Fund
	Proserpine Grub Pest Fund
<1907	Plane Creek Insect Pest Destruction Fund
<1909	Gairlock Beetle Fund
	Gairlock North Farmers Association Beetle Fund
	Hawkins Creek Pest Destruction Fund
	Fairford Beetle Fund
	Stone River Beetle Fund
	Victoria Beetle Fund
1909	Cairns District Canegrowers Pest Destruction Fund
<1910	Childers Mill Grub Fund
<1915	Lannercost Pest Destruction Fund
1916	South Johnstone Cane Pest Board
<1920	Babinda Mill Beetle Fund
<1922	Cassowary Rat Pest Destruction Fund
<1927	Miallo Rat Pest Destruction Fund
<1929	Forest Home Pest Destruction Fund
	Upper Stone River Beetle Fund
1931	Hambledon Cane Pest Fund
	Mulgrave Pest Destruction Fund
	Isis Cane Pests Fund
1934	Hambledon Cane Pest Board
	Macknade Pest Destruction Board

Table 11.2—Voluntary Pest Destruction Funds, listed in geographical order from north to south, with actual or inferred years of establishment and termination.

Name	Year Established	Year Terminated
Mossman-Tully		
Mossman Insect Pest Destruction Fund	1898	1932
Cassowary Rat Pest Destruction Fund	<1922	1932
Miallo Rat Pest Destruction Fund	<1927	1932
Hambledon Beetle Fund	1898	1909
Cairns District Canegrowers Pest Destruction Fund	1909	1931
Hambledon Cane Pest Fund	1931	1934
Hambledon Cane Pest Board	1934	1960
Mulgrave Mill Beetle Fund	1898	1909
Mulgrave Pest Destruction Fund	1931	1942
Babinda Mill Pest Fund	<1920	1952
Johnstone River Grub Destruction Fund	1896	1916
Goondi Cane Pest Destruction Fund (previously Goondi Beetle and Grub Fund)	1895	1987
Mourilyan Cane Pest Destruction Fund	1897	1975
South Johnstone Cane Pest Board	1916	1927
Herbert		
Herbert River Pest Destruction Fund	1896	1900
Macknade Beetle Destruction Fund	1895	1934
Ripple Creek Beetle Fund	1895	1934
Halifax Planters Club Pest Destruction Fund	1895	1934
Gairlock Beetle Fund	<1909	1934
Gairlock North Farmers Association Beetle Fund	<1909	1934
Hawkins Creek Pest Destruction Fund	<1909	1934
Fairford Beetle Fund	<1909	1934
Stone River Beetle Fund	<1909	1934
Victoria Beetle Fund	<1909	1934
Lannercost Pest Destruction Fund	<1915	1934
Upper Stone River Beetle Fund	<1929	1934
Forest Home Pest Destruction Fund	<1929	1934
Macknade Pest Destruction Board	1934	1991
Central Queensland		
Proserpine Grub Pest Fund	1898	1953
Mackay Insect Pest Destruction Fund	1896	1924
Homebush Mill Beetle Fund	1895	1921
Plane Creek Insect Pest Destruction Fund	<1907	1924
Southern Queensland		
Isis Grub Pest Destruction Fund	1897	1930
Childers Mill Grub Fund	<1910	1920
Isis Cane Pests Fund	1931	1934

11.4 Subsidy payments by Government, 1896 to 1908

The first Government subsidy on funds raised for beetle purchase was announced in late 1896, as noted earlier, and continued to be paid from Government or Sugar Fund sources until 1930. The regulations stipulated that a central committee must be set up in each district to receive the voluntary levies, mill subsidies and donations, and to control the overall purchase scheme. Government subsidy was channelled through the Department of Agriculture, which paid on receipt of documented evidence of funds raised.

Subsidy for the 1896–97 campaign was £1500. This ended up as 17/1½^d in the £1 raised, ie about an 85% subsidy (Department of Agriculture Ann. Rep. for 1896–97). The figures quoted were:

	Subscriptions	Subsidy
Mackay Committee	£633-17-6	\$542-0-1
Herbert R Beetle Account	£680-0-0	£565-2-6
Goondi Beetle Destruction Fund	<u>£455-5-1</u>	<u>£389-11-10</u>
	<u>£1,769-2-7</u>	<u>£1,496-14-5</u>

Mourilyan Plantation had also raised and spent £112 but did not submit an account until too late, and subsidy funds were virtually exhausted.

In 1897–98, total subsidy was reduced (SJTC 7:150) and came to only 6/- in the £, a 30% subsidy. For 1898–99, the amount of Government funding was increased substantially, but much of it was not used as beetle numbers plummeted. It is not known which, if any, new areas received subsidy during these years, but canegrubs were causing problems in Cairns district and in Isis (SJTC 8:178 and 272), and shortly afterwards in Mossman (SJTC 11:147).

The overall Government subsidy scheme continued, but there was no further reference to it in Departmental Annual Reports until 1908. We know from Proserpine Canegrowers old records that subsidy was paid to the local fund from 1900–01 at the rate of 10/- in the £ raised, ie a 50% subsidy.

11.5 Sugar Fund becomes the source of subsidy, 1909 to 1930

The source of the funding changed in 1908, however, following excessively heavy damage from greyback grubs in the Cairns district in

the 1907 and 1908 crops. BSES at that time had no entomology staff so demands for help once again went to the Department and its Entomologist Henry Tryon. The 1907–08 Annual Report tells the story:

“It has been the custom during past years to subsidise the efforts of local planters in the destruction of the sugar-cane grub, but in consequence of the repeated applications from planters and from representative bodies of the planters for the services of an entomologist to thoroughly investigate the pest, and if possible, prescribe a remedy, this subsidy in future is to be withdrawn, and in place thereof additional assistance will be given to Mr Tryon, to enable him to have more leisure to study the problem. He has already paid one visit to the Cairns district, and later will again make a prolonged stay in a place where the pest is bad.”

This piece of news probably went down like the proverbial lead balloon, as we see from the next quote from the 1908–09 Annual Report. The industry got Tryon’s investigations, had its pest destruction subsidy reinstated but from a different source of funding, and within two years BSES had appointed an entomologist.

“It has been provided in the Act that the Minister may utilise the funds raised under the Act for preventing the spread of disease in cane, and otherwise for promoting the well-being of the sugar industry; and as the sugar-cane grub is fast becoming so destructive, and is affecting the output of cane to such a degree that some strong effort should be made to limit the depredations of it, the power that is given under the Act in this direction will be utilised towards assisting sugar-cane growers in ridding themselves of this and other such pests.”

Nothing more appeared in Departmental Annual Reports. Strangely, nothing ever appeared in BSES Annual Reports on the subsidy until 1922–23 when the Sugar Fund Balance Sheet was first published—a cryptic single line said ‘Subsidies for Grub (or Pest) Destruction’.

However, the Second Reading Speech of Agriculture Minister W. N. Gillies on the SES Act Amendment Bill of 1923, and memos of BSES Director Harry Easterby in early 1924 and March 1928 (BSES files), give a good description of how the system worked.

There was no specific provision allowing subsidy payments, but a broad interpretation of the Act and industry support allowed it to be done.

By 1923, however, the Minister noted that there were legal doubts on its validity, if challenged.

The subsidy was only paid to Local Committees formed in affected districts or areas to collect subscriptions and control operations. These funds were placed in a special account with a bank, and could only be operated on by cheque by the duly authorised office bearers. Lists of contributions received, certified by Committee officer bearers and the bank manager, were forwarded to the Department of Agriculture and Stock at the end of each financial year. Subsidy was then paid by cheque to the Local Committee's special bank account, at the rate of 10/- in the £ raised, ie 1:2. Initially, subsidy was paid only on money raised for destruction of beetles and grubs, but rats were added about 1910 and weevil borers and grasshoppers in 1914.

The Sugar Fund (SES Act levies plus 1:1 government endowment) became the source of the subsidy in 1909. A note in the Australian Sugar Journal in 1910 (ASJ 2:409) noted that £1,256 was spent on beetle destruction in the December 1909–February 1910 period, on which the Sugar Fund paid a 50% subsidy.

This was really only a partial endowment by Government, in contrast to that which had operated from the 1895–96 season. This had been totally from Government funds, while the Sugar Fund consisted of 50% sugar industry levy plus 50% Government endowment.

The 15 voluntary boards which received subsidy in 1922–23, and the amounts, were listed by the Minister in his speech and are shown in Table 11.3. It is believed that others were in existence but had not claimed subsidy in that year.

It was the Government's intention to stop subsidising voluntary boards after the 1923 Act Amendment, probably to encourage the formation of statutory Cane Pests Boards. Easterby noted in his 1924 memo that several voluntary boards wanted to remain as they were, provided subsidy payments continued. He recommended that subsidy be continued for such voluntary Pest Destruction Boards, and the Minister agreed on 19 February 1924. In a memo of 28 March 1928, Easterby listed 14 Boards still operating under the old system, and the amount of subsidy paid to them in 1927 (Table 11.3).

Nothing is known of the total amount of subsidy provided each year until the 23rd Annual Report of BSES in 1923, when the Balance

Sheet for the Sugar Fund was published for the first time. ‘Subsidies for Grub (or Pest) Destruction’ were shown in 1923, 1924 and 1927–31, but the Balance Sheet itself was omitted in 1925 and 1926. Subsidies for the financial years were:

1922–23	£1,855
1923–24	£2,485
1926–27	£1,902
1927–28	£1,985
1928–29	£1,301
1929–30	£2,177
1930–31	£2,137

The subsidy was ended by Government in 1930 (BSES 31st Annual Report), probably due to stringent financial controls introduced to combat the Depression. Strangely, this was the only reference to the subsidy in the text of any BSES Annual Report, and one of the very few references to voluntary boards.

Table 11.3—Subsidy paid to 19 Voluntary Boards from the Sugar Fund in 1922–23 and/or 1927.

	Subsidy Paid (£)*	
	1922–23	1927
Cassowary Rat Pest Destruction Fund	53.6.2	5
Fairford Beetle Fund	**	nil
Gairlock Beetle Fund	46.15.0	**
Gairlock North Farmers' Assoc. Beetle Fund	**	42
Goondi Cane Pest Destruction Fund	269.19.4	482
Halifax Planters' Club Pest Destruction Fund	**	61
Hawkins Creek Pest Destruction Fund	172.13.5	nil
Isis Grub Pest Destruction Fund	127.9.6	nil
Lannercost Pest Destruction Fund	83.14.11	**
Mackay Insect Pest Destruction Fund	36.6.1	N.A.
Macknade Pest Destruction Fund	125.4.6	nil
Miallo Rat Pest Destruction Fund	**	40
Mossman Insect Pest Destruction Fund	65.0.0	50
Mourilyan Cane Pest Destruction Fund	54.17.9	106
Plane Creek Insect Pest Destruction Fund	50.0.0	N.A.
Proserpine Insect Pest Destruction Fund	175.0.0	209
Ripple Creek Beetle Fund	113.11.0	165
Stone River Beetle Fund	106.4.10	192
South Johnstone Cane Pest Destruction Fund	375.16.8	N.A.
TOTAL	£1,855.19.2	£1,352

* N.A. – not applicable to Mackay, Plane Creek and South Johnstone in 1927, as they had converted to statutory Boards.

Nil – funds were named in the source but they received no subsidy in 1927.

** funds not named in the source.

Chapter 12 Development of the Statutory Board system

THE CONCEPT OF statutory Boards to control pests, and later diseases, was introduced by the 1923 Amendment to the S. E. S. Act, as outlined in Chapter 5. Several mill areas or districts were keen to change to the new system as soon as feasible, since it provided a mechanism for raising a compulsory levy on all canegrowers in their area. Many others were wary of, or did not want, the government ‘interference’ that came with it, or adopted a ‘wait and see’ attitude.

12.1 Cane Pests Boards

Three were formed within a few months but there were still only six by 1931, compared with 23 voluntary Pest Funds. By 1938 there were 12 Cane Pests Boards but the number of voluntary Funds had declined dramatically to only seven. Significant factors in this decline were the amalgamation of six Funds in the Macknade area into a new Macknade Pest Destruction Fund, and the closure of five Funds in Victoria area when a statutory Board was formed.

1924. Mackay, Plane Creek and Lower Burdekin Boards were constituted in April, as soon as practicable after the legislation was passed, following strong interest by the canegrower organisations. Mackay and Plane Creek replaced voluntary Insect Pest Destruction Funds, but none had operated in the Burdekin district.

1926. South Johnstone and Tully Boards were constituted in October, the former replacing the voluntary Cane Pest Board. Tully was a new mill area so growers opted to have a statutory Board from the start to help them deal with canegrub and rat problems.

1929. Invicta (Ingham line) Board was constituted in August. There is no evidence of a prior voluntary Fund, but the area suffered from the same canegrub and rat problems as the adjacent Victoria Mill area.

1932. Mossman Board was constituted in early 1932 to replace the three voluntary Pest Destruction Funds dealing with serious canegrub and rat problems—Mossman Insect Pest Destruction Fund and Cassowary and Miallo Rat Pest Destruction Funds. This followed grower and miller discussions on the matter in 1931.

1934. Victoria Board was constituted in February following a request by Herbert River Canegrowers. Millowner CSR was not happy with the proposal but a ballot of growers, as provided under the Act, was in favour by 60% to 40%. (A similar ballot in Macknade voted against a statutory Board.) The new Board resulted in the closure of five small voluntary Funds—Fairford, Forest Home, Lannercost, Stone River and Upper Stone River Beetle or Pest Destruction Funds.

Isis Board was constituted in August 1934, at a time of some turmoil in the district sugar industry when CSR closed its Childers Mill. It replaced that mill's voluntary Isis Cane Pests Fund, but also included other growers in the district who had been covered by the Shire Council's Isis Pest Destruction Fund until it terminated in 1930.

1935. Invicta (South of Townsville), Pioneer, Kalamia and Inkerman Boards were constituted in November when the former **Lower Burdekin Board** was split up. This was precipitated by a request in 1934 from Inkerman growers to have their own Board.

12.2 Cane Disease Control Boards

The 1938 Act Amendment came into effect at the end of October 1938, as outlined in Chapter 7. The first three Boards were constituted in early February 1939, a further three Boards before the end of June, and the final two were added in October 1939. These eight Boards covered those areas where Fiji, downy mildew and gumming diseases were causing serious problems or threatening to do so.

1939. February. Bundaberg, Isis, Maryborough and Moreton Boards were constituted to control Fiji disease in the major variety POJ2878, but downy mildew was becoming as big a problem in Bundaberg by then. **Mackay Board** was constituted because of a significant downy mildew disease outbreak in the important POJ varieties.

1939. April. Mulgrave Board was constituted as gumming disease was starting to spread quickly in the important SJ4 variety.

1939. October. Hambleton and Mossman Boards were constituted to control incipient gumming and downy mildew outbreaks. In Hambleton's case, the statutory Board was imposed despite local

(mainly CSR) opposition. BSES felt that the voluntary Board was not taking enough action, and that statutory backing was needed.

12.3 Cane Pest and Disease Control Boards

The 1941 Act Amendment came into effect in November as outlined in Chapter 7. It provided that a single Cane Pest and Disease Control Board would be constituted for each area or district, to operate from 1 April 1942 following the next Board elections. The 16 new Boards replaced the 12 Cane Pests Boards and eight Cane Disease Control Boards which operated up to the end of March.

The decrease of four in total numbers was due to the presence of dual Boards in Mossman, Mackay and Isis, and the re-amalgamation of Pioneer and Kalamia Boards into the Lower Burdekin Board.

1942. The 16 Boards constituted were **Mossman, Hambleton, Mulgrave, South Johnstone, Tully, Victoria, Invicta (Ingham Line), Invicta (South of Townsville), Lower Burdekin, Inkerman, Mackay, Plane Creek, Bundaberg, Isis, Maryborough and Moreton.**

1946. Rocky Point Board was constituted in September because of the Fiji disease position.

1949. Lower Burdekin was renamed **Ayr Board.**

1952. Babinda Board was constituted in December as there was no local pest or disease control work in progress, and the identification of RSD made this essential.

1953. Proserpine Board was constituted in December at the request of the local industry, following the discovery of RSD. It replaced the voluntary Proserpine Insect Pest Destruction Committee.

This was the final act in bringing all canegrowing areas in Queensland under an organised system of pest and disease control, with 19 statutory and three voluntary (Goondi, Mourilyan and Macknade) Boards.

1958. Invicta Board was formed in April by amalgamation of the two previous Invicta Boards. This followed the loss of much assigned land to Victoria Mill by Invicta Mill, making the Invicta (Ingham Line) Board unviable.

1972. Bundaberg Board was abolished in November, and the **Bingera-Gin Gin, Fairymead and Millaquin-Qunaba Boards** were

constituted. This action was precipitated by the great Fiji disease epidemic in the district, and the desire by some canegrowers for more localised control.

1975. Mourilyan Board was constituted in February, replacing the voluntary Board after the mill withdrew its support. This followed a difference of opinion on the continued subsidisation of insecticide by the Board despite miller objections.

1975–91. The statutory Board system reached its peak of 21 Boards in 1975, with two voluntary Boards completing the state coverage. All statutory Boards have been listed in Table 12.1, together with their date of establishment, and where relevant, their abolition.

The only change of note up to 1991 occurred in 1987 when Goondi Mill was sold and the assigned area was split between Babinda and Mourilyan Mills. The voluntary Goondi Board closed, and the areas of the Babinda and Mourilyan Boards were increased to cover their ex-Goondi growers.

12.4 Cane Protection and Productivity Boards

All 21 Cane Pest and Disease Control Boards were renamed as Cane Protection and Productivity Boards in 1991, when the Sugar Industry Act 1991 replaced the SES Act. The Boards retained their pest and disease control duties, but were also given the power to work on all other cane productivity matters. This prompted Macknade, the last voluntary board, to amalgamate with Victoria CPPB in 1992 to form the Herbert CPPB.

However, the statutory Board system came to a sudden end only 12 years later, with an amendment to the Sugar Industry Act in 2003. Boards were given until 30 June 2004 to set up a suitable private entity to receive their assets, as any remaining boards would be automatically abolished on that date. All complied.

Table 12.1—Listing of statutory Cane Pests Boards (CPBs), Cane Disease Control Boards (CDCBs) and Cane Pest and Disease Control Boards (CPDCBs), with their date of establishment and date of abolition where relevant

Name	Date Established	Date Abolished**
Mossman CPB*	early 1932	
Mossman CDCB *	7 Oct 1939	
Hambledon CDCB *	7 Oct 1939	
Mulgrave CDCB *	17 Apr 1939	
Babinda CPDCB	20 Dec 1952	
Mourilyan CPDCB	1 Feb 1975	
South Johnstone CPB*	Oct 1926	
Tully CPB*	Oct 1926	
Victoria CPB*	10 Feb 1934	
Invicta (Ingham Line) CPB*	24 Aug 1929	31 Mar 1958
Invicta (South of Townsville) CPB*	30 Nov 1935	31 Mar 1958
Invicta CPDCB	1 Apr 1958	
Lower Burdekin CPB	Apr 1924	30 Nov 1935
Pioneer CPB	30 Nov 1935	31 Mar 1942
Kalamia CPB	30 Nov 1935	31 Mar 1942
Lower Burdekin CPDCB (Renamed Apr 4 June 1949)	1 Apr 1942	
Inkerman CPB*	30 Nov 1935	
Proserpine CPDCB	19 Dec 1953	
Mackay CPB*	12 Apr 1924	
Mackay CDCB*	25 Feb 1939	
Plane Creek CPB*	5 Apr 1924	
Bundaberg CDCB*	4 Feb 1939	30 Nov 1972
Bingera-Gin Gin CPDCB (renamed Bingera 1975)	30 Nov 1972	
Fairymead CPDCB	30 Nov 1972	
Millaquin-Qunaba CPDCB (renamed Millaquin 1975)	30 Nov 1972	
Isis CPB*	Aug 1934	
Isis CDCB*	4 Feb 1939	
Maryborough CDCB*	4 Feb 1939	
Moreton CDCB*	4 Feb 1939	
Rocky Point CPDCB	7 Sept 1946	

* On 1 April 1942, Cane Pests Boards and Cane Disease Control Boards were amalgamated where both existed for the one area, and became Cane Pest and Disease Control Boards.

** All existing Boards became Cane Protection and Productivity Boards on 15 July 1991, then were abolished and privatised during the period 2003 to end of June 2004.

Chapter 13 Pest Board/BSES/Government relationship

THE RELATIONSHIP BETWEEN Boards and BSES/Government was coloured from the beginning by basic differences over funds raised and who should control them, and the right of Government to “dictate” how a broad range of operations should be carried out.

- **The Boards’ attitude** was that, even though government facilitated the compulsory levy, the money was local sugar industry money; and so they should be able to spend it on local priorities within reasonably wide parameters. Also, as small local bodies, they should not be subject to a lot of bureaucratic red tape.
- **The Government attitude**, which BSES had to promote and “police”, was that money raised by a statutory levy was “public money” legally, not “sugar industry money”, so rules and restrictions applied to how it could be spent. Also, Boards were statutory bodies and had to operate according to guidelines and rules relevant to such bodies.

Despite these differences, Boards came to appreciate the benefits that flowed from the statutory situation, and from the disease and pest control powers given to BSES and the Minister under the SES Act from 1938. On many occasions they were more hardline in their attitude to enforcement than were BSES and Government!

13.1 The State of Boards by 1935

Legislation on Cane Pests Boards was introduced in 1923 primarily to provide for compulsory levies on growers and millers for pest control purposes, but not enough was done to ensure that the system would work efficiently.

The Act defined the Powers and Duties of Boards as “to take all proper steps for the suppression and prevention of cane pests”, and required proper books of accounts to be kept which were open to inspection by the Minister’s appointee.

The Regulations under the Act certainly prescribed how to object to a Cane Pests Board being formed; how to elect Board members and run Board meetings; defined what cane pests they could work on; and gave Boards power to require landholders to eradicate pests. Beyond that, Boards were largely on their own, and could ignore advice given to them by BSES if they wished.

The question of rat control, particularly (but not only) in the Herbert, eventually brought matters to a head for both statutory and voluntary Boards because of the menace to public health from Weil's disease. This culminated in the Herbert in a statutory Board being set up in Victoria Mill area, and rejection of it by Macknade growers on two occasions in 1934 and 1936 at the instigation of CSR.

In early 1935, Reg Mungomery (BSES Assistant Entomologist at Meringa) was asked to prepare a confidential report on the functioning of all Pests Boards in North Queensland (Report to Director, 5 July 1935).

“Where an efficient Field Supervisor is employed by the Board, and it is prepared to be guided by his ideas and experience, such a Board operates successfully. But where the Board has no technical officer to guide its destinies, and operates according to the ideas of some clerk or agent, there is no doubt that a good deal of effort and money is wasted, and pest suppression under the circumstances is in a very bad way.”

“In most compulsory Pests Boards, the supervision and results are good, but it depends on the administrative ability of the Supervisor and the limitations imposed by the Board. In the voluntary Board areas, except those in CSR mill areas which are policed by efficient officers of that company, the control of pests appears to be most haphazard, with little or no supervision of application of poisons and fumigants or checking of results.”

“Much can be said from both points of view as to the relative advantages of compulsory or voluntary boards. However, it must be admitted that the successful voluntary Boards are operated along the lines of compulsory Boards – they are compulsory in all but name.”

Mungomery was critical of many statutory and voluntary Board members.

“In many cases, persons nominated to these Boards are not sufficiently versed in matters of pest control to appreciate the considerations involved in a pest suppression or prevention campaign. Therefore, they are not in a position to formulate a policy to minimise pest damage. In some mill areas, not content with two Board representatives, mill management

often uses its influence to have a person nominated who is under some financial obligation to the mill and becomes a tool of management.”

Mungomery considered that in certain areas, Board operations may be diametrically opposite to BSES recommendations. He quoted at some length on use of inappropriate poisons for grub control, and payment for beetles in districts with very broken country where no relief could be expected from the collecting. Cooperation between Boards was deficient in many cases, and he quoted the situation where one Board paid a bounty on rats’ ears while an adjacent one paid on rats’ tails!

Mungomery’s recommendations were:

“It seems desirable, therefore, that all Pest Boards should be made compulsory with the possible exception of the CSR areas, which are virtually compulsory Boards and which might for some time be allowed to function as they are now.”

“I think that the ultimate aim of BSES should be to have control over all Pest Boards, or have adequate representation on them, with power to veto any suggestion for pest control which is not according to BSES recommendations. Pest Boards would then function according to the experience of BSES officers, and not according to the whims of some growers or mill officials who are not conversant with pest control. As far as possible, all Boards should employ a Field Supervisor who would act in conjunction with BSES staff. There should also be more uniformity in payment for pests.”

13.2 CSR Objections to Compulsory Boards

The episode with rat control in 1934–36 reinforced CSR company and staff opinions that government and BSES “interference” in their affairs must be resisted strongly. Some misunderstandings on both sides had occurred, but CSR’s refusal to compromise had precipitated the crisis. From the earliest years, CSR had adopted the admirable policy of carrying out research on diseases and pests and providing technical staff in each of its mill areas to oversee pest and disease control matters, as well as varietal and agronomic matters. Where voluntary Funds operated in CSR mill areas, they were generally efficient because they were under CSR staff control.

The antipathy of CSR for Department of Agriculture and BSES existed long before 1923 when statutory Pests Boards were introduced. It

amounted to a “keep out of my domain” attitude. However, some technical staff did cooperate well at times, and the policy did not preclude cooperation in matters of material interest outside of CSR mill areas, eg at Pest Board Annual Conferences.

This attitude was still quite strong up to the 1950s, even in CSR areas such as Victoria and Hambleton where statutory Boards had been set up, but then gradually waned. Whatever the reasons, the long standoff between CSR and BSES was regrettable – both sides had things to contribute to the formation of a better system of Boards.

13.3 Annual Conference of Pests Boards

BSES was part of the Department of Agriculture from 1900 to 1951, and so was responsible to the Under Secretary and the Minister. The sugar industry contributed more than half the finance for BSES, but had no say in running it, much to its chagrin. This was finally addressed by government in 1934 when an Advisory Board with industry representatives was set up. There was now a body for 2-way communication at a high level between the sugar industry as a whole, BSES and the Minister on relevant matters.

In 1935, the recently formed Advisory Board reviewed the status of pest control in north Queensland, during a meeting in Cairns. Members agreed that greater cooperation between Boards, BSES and the Advisory Board would be beneficial. They recommended that a meeting be held in October 1935 under the chairmanship of Assistant Director Arthur Bell, to be attended by relevant BSES staff and representatives of statutory and voluntary Boards. A BSES officer would be the coordinating agent.

Subsequently, it was decided to meet annually as a Standing Committee on Pest Control, and Rules for the Conduct of Meetings were adopted in 1937.

Interestingly, a major object was to act in an advisory capacity to BSES, as well as improving the efficiency of pest control methods, discussion on technical aspects, and encouraging research.

Indicative of its value was that the technical standard of the discussions, and the understanding of the delegates, progressively improved in the 1935–39 period. Conference became an important extension contact point for BSES, and a time for Boards to pressure BSES and government on pest and disease control matters. (see Chapter 14 for a detailed treatment).

13.4 BSES rationale on Boards, 1935–1973

In a broad review of the situation in March 1937, BSES Director Bill Kerr, considered that “where compulsory Boards had been created and a competent supervisor appointed, the control of pests has been carried out in a creditable manner. ...effects would be even more pronounced were there some active cooperation between the compulsory Boards through the medium of a BSES executive officer.”

The prescription for more effective pest control had been laid out, but it would be almost 40 years before BSES representation on Boards was achieved and a Pest Board coordinator was appointed.

However, epidemics of Fiji and downy mildew diseases soon forced the first changes. Norm King, BSES Director 1948–1972, provided background to these in 1972 in an internal BSES document “Some Notes and Some Comments on Bureau History”. His comments are paraphrased:

“The 1938 Act Amendment prescribed measures for pest and disease control. BSES did not have the staff or funds to carry them out, nor could it increase the levy sufficiently to employ the extra inspectors needed.”

“The solution was to set up Disease Control Boards, but on a much improved Board model. In theory, they were meant to be an extension arm of BSES, carrying out BSES policy on disease and pest control matters, amended to suit local conditions. A lot more rules, regulations and accountability were built into the system to remove previous deficiencies. Not surprisingly, some of these also resulted in some of the later friction between Boards and Government and BSES.”

“In times of stress, most Boards did a magnificent job. Many cooperated fully with BSES at all times. However, some were selective in what they would or would not do at other times, while the rest often wanted to do things their way.”

“In the early years, Board membership was not sought after greatly, but grew into a job with some district prestige and influence. A few mill managers still manipulated grower membership to ensure mill control of Board policy, levy rate and staff. Some Boards did not bother, or even refused, to invite the local BSES officer to attend meetings in an advisory capacity.”

“Some Boards resented BSES and Government ‘interference’ in their affairs generally, attempting to become even more autonomous. Items such as staff salaries and conditions, and Board member fees and expenses, were a particular problem as they required Ministerial approval on the recommendation of the Sugar Experiment Stations Board.”

“In 1970–71, the SES Board finally sought to have a BSES officer appointed to each Pest Board, with voting powers only on pest and disease control matters. The Minister and Government were agreeable, as were the millers and ASPA. However, QCGC refused and the proposal was shelved until it withdrew its opposition.”

Norm King’s notes tended to dwell on the negative aspects, which were quite annoying to all sides at times and needed to be fixed. However, the underlying structures were sound and had delivered some great achievements in disease and pest control operations.

Once again, the catalyst for change came from disease upsurges in 1972 and 1973—Fiji disease in Bundaberg and leaf scald disease in Mackay. These demonstrated the need for better technical inputs at Board meetings, and the SES Board resurrected the proposal to appoint a BSES officer on all Boards.

This time, all three sugar industry organisations supported the move provided the officer could not vote in the election for Chairman or in determining the levy.

The 1973 Act Amendment added a sixth member, a BSES officer, to join the three growers and two miller members of the Board.

13.5 Years of Change, 1974–1990

A BSES member was appointed to all 20 statutory Cane Pest and Disease Control Boards from 1st January 1974. This was the first major change in membership since their inception, but was just the first of a series of events to profoundly affect them over the next 26 years.

13.5.1 Coordination and Administration of Boards

A new BSES position – Coordinator of Cane Pest and Disease Control Boards – was created to provide better administrative control and to be the Board Member. The aim was to strengthen their technical knowledge and improve liaison between Boards and BSES. Advice on all matters, including legislative requirements, was readily available.

Brian Egan, formerly Senior Pathologist in north Queensland and then in charge of the Bundaberg Fiji disease control campaign, was Coordinator from January 1974 until 1989. He had worked closely with many Boards on disease control campaigns over the previous 20 years. This helped to dissipate the fears and concerns of some Boards and members on the “real intentions” of BSES and government.

The transition was relatively stress-free, and most welcomed or soon grew to welcome the change. Initially, the Coordinator tried to attend two meetings of each Board annually, accompanied by the relevant BSES Extension Officer. The latter was his unofficial proxy at all other Board meetings, and this arrangement was formalised by Act Amendment in 1976. It was no longer essential for the Coordinator to be present at meetings, and by the mid-1980s his attendance was mainly by specific request.

Boards appreciated the benefits of this. The Coordinator was **their** point of contact, they knew more of current and future developments, and they felt part of a “group” throughout the year.

The Coordinator position continued after the transition to Productivity Boards in 1991, but soon changed and assumed less importance. In retrospect, it provided a major new relationship between BSES and Boards which upgraded the technical competence of Board members and staff.

13.5.2 Special Business Sessions, Pest Boards Annual Conference

BSES Director Owen Sturgess was determined to improve Board members’ understanding of the legislation governing Boards, as well as the wide variations which existed between Boards. The 37th Annual Conference in 1975 broke new ground with the holding of a Special Business Session, with further sessions in 1976 and 1977. These were chaired by the Director and attended by SES Board members also.

They highlighted the great disparity which existed between Boards over a wide range of financial and operational issues. Wide ranging discussions occurred on matters such as levies and Ministerial control over expenditure; Board members’ obligations, fees and allowances; control over staff salaries, allowances and training; powers and duties of Boards; the desire for greater autonomy and why it is inconsistent with the Act; and the future vision for Boards.

By 1977 when the final session was held, Board members had a much better appreciation of how the Act, the Minister and the SES Board

governed their operations. In turn, they were able to obtain some Act and many procedural changes which made for smoother operations and less irritating delays.

13.5.3 Changing the Pest Board System, 1970s to 1980s

Government, legal and industry thinking on many matters began to change from the mid-1970s, with consequential impact on Boards and their responsibilities.

- Accountability assumed far greater importance. New laws, regulations and rules were introduced, including the examples given below. These increased the work load of Boards and BSES, and caused a lot of friction at times.
- Under the new Fauna Conservation Act of 1974, traditional cane pests such as native rats, wallabies, cockatoos and coots were protected. They could only be controlled (killed) under permit. A satisfactory permit system for rats was eventually organised with the National Parks and Wildlife Service, but recurrent problems ensured tension remained.
- Amendments to the Financial Administration and Audit Act in 1986 imposed more stringent requirements and timing on Annual Reports of the 21 Boards. BSES had to compile these in one volume for the Minister to present in Parliament. Problems inevitably occurred, tempers flared at the “ridiculous red tape” at times, and voluntary Boards began to look attractive to some!
- But it was a perceived threat to the very existence of Boards which caused the most angst and concern. This first arose in 1976 when Government set up “A Committee of Enquiry into Animal and Vegetable Pests in Queensland”. This examined the overall position in the state for all industries. Presentations emphasising the benefits and achievements of the Pest Board system were made by many sugar industry organisations, including BSES and some Pest Boards. Integration into any wider system, a single Pest Board Authority, was opposed, and this view prevailed. Distrust of government increased in some Board areas, however.

- Productivity Boards began to be formed in some mill areas in the early 1970s. The Powers and Duties of Boards did not permit funds to be spent on productivity functions unless related to pest and disease control. Boards were divided on the issue of whether they should be involved, but most were not in favour. The proposal was debated over the 1976–1980 period, but then dropped.
- The Sugar Industry Review Program (SIRP) was set up by government in 1984 to examine the whole industry and recommend changes. This started a seven year period of turmoil for Pest Boards, which generally supported retention of their present autonomous form.
- The Sugar Industry Working Party (SIWP) initially recommended in 1985 that they be absorbed by BSES. This was not favoured by Boards or BSES, which produced a discussion paper recommending their retention with certain changes. As an interim measure, Boards in 1987 were given the power to give advice on weeds and weed control.
- A major change was forecast by SIWP in 1988 with its recommendation that Powers and Duties of Boards be expanded to incorporate all productivity functions. This was legislated in the Sugar Industry Act 1991, and Cane Pest and Disease Control Boards became Cane Protection and Productivity Boards in July 1991.

13.6 The Levy

The 1923 Act Amendment set up Cane Pests Boards, with funding from an assessment levied on sugar cane crushed at the mill. The initial levy was set at no more than three pence (3^d, or 2.5¢ in metric terms) per ton of cane, to be paid in equal parts by the grower and the miller.

The levy rate was determined solely by each Board. The money raised was collected by the mill and sent to the Minister for Agriculture, who had it transmitted (after various delays) to the relevant Board. The maximum permissible rate was changed to six pence (6^d, 5¢) per ton by the 1941 Act Amendment.

The mechanism for levy payment was cumbersome and introduced unnecessary delays. With the removal of BSES from the

Public Service in 1951, the SES Board was given the responsibility of receiving the levy and re-transmitting it to Boards. This suited neither party, and after “industry pressure” on government, a 1954 Act Amendment sensibly resulted in levies being paid directly to the relevant Board.

The next change occurred with the 1973 Act Amendment, following major Fiji disease problems in south Queensland and erosion of money values. The levy rate was maintained at 5¢/tonne, but a discretionary clause was added so the Minister could recommend a higher rate in specific circumstances, subject to approval by the Governor-in-Council.

Serious inflation resulted in a 1976 Act Amendment which increased the permissible rate to 10¢/tonne, where it remained to 1991. However, financial accountability laws and regulations became more stringent from the late 1970s. Boards were required to justify their levy rate, and fully argue their case for anything more than a minor increase.

Table 13.1—Data on levy during 1950–1990.

Crop	Tonnes (m)	Levy Rate (Av, ¢/t)	Levy (\$m)
1950	6.2	1.6	0.10
1955	9.9	1.9	0.18
1960	8.7	2.1	0.18
1965	13.5	1.9	0.26
1970	16.6	2.3	0.38
1975	21.1	5.0	1.06
1980	22.5	6.4	1.45
1985	23.0	7.2	1.65
1990	23.9	6.1	1.46

The actual levy rates for individual Boards varied greatly in any one year, reflecting the degree of pest and disease incidence in each area. Data from the earlier years is difficult to obtain, but the average levy rate in the 1920s was probably no more than one penny (1^d, 0.8¢) per ton. Table 13.1 provides data from 1950 to 1990 at 5-yearly intervals on crop size, levy rate and total levy income.

The average levy rate rose with inflation, more than doubling in the early to mid-1970s due to that and the demands of the southern Fiji

control program. However, the trend was reversed from the mid-1980s due to the downturn in sugar industry fortunes. Overall, Boards generally adopted responsible attitudes towards levy rates, and kept administration costs at a low level

Chapter 14 Annual Conferences of Boards

THE ANNUAL CONFERENCE of Cane Pest and Disease Control Boards (colloquially known as Pest Board Conference) became a focal point for Boards from the late 1940s. Ideas and information were exchanged, friendships were forged and pressure could be put on BSES and Government on pest and disease control matters. While grower and miller members often had other contacts through mill area, district and state-wide bodies, this became the major contact point between supervisors. It was also an important extension contact point for BSES staff at a time when such contacts were not well developed, and supervisors and Board members were less knowledgeable on pest and disease control methods.

It is interesting to explore how Pest Board Conferences began and took on the format which lasted for many years. Important developments, and the first appearance of some of the real characters in Pest Boards, will also be noted.

Most of this information came from the Minutes and Proceedings of the Conferences and from BSES Annual Reports. A listing of all 50 Conferences held from 1935 to 1991, with dates, venues and chairmen, is given in Table 14.1. The most frequently used locations were Bundaberg (eight times) and Mackay (seven).

There was little formal contact between the various Boards and Funds, even after statutory Pests Boards were formed. Naturally, some liaison occurred between Boards or voluntary Funds operating in the same district or in adjacent mill areas, eg on prices paid for beetles or scalps.

BSES staff, particularly entomologists, had varying degrees of contact and shared information with the Boards and Funds. CSR technical field staff had always been associated with voluntary Funds in CSR mill areas, and so provided a link between them.

In 1935, the recently formed Advisory Board of BSES reviewed the status of pest control in North Queensland, during a meeting in Cairns. They considered that good work was being done by most Boards, but that greater cooperation between Boards, BSES and the Advisory Board would be beneficial. This would be best achieved by holding conferences attended by representatives of Pests Boards and BSES staff, with a BSES officer as the coordinating agent.

14.1 Information and Highlights from Conferences, 1935–1991

The 1st Conference (October 1935) was held in Townsville. Invitations were sent to all nine statutory and voluntary Boards north of Townsville and to the Directorates of Mulgrave and Babinda mills. These mills did not have Boards but had pest destruction funding available through the mills. This policy of inviting voluntary as well as statutory Boards continued to the end, with no distinction on voting rights.

The Conference was chaired by Arthur Bell (BSES Deputy Director) with Meringa entomologist Reg Mungomery as the other BSES attendee. Seventeen Board representatives attended from the Mossman, South Johnstone, Tully, Victoria and Invicta (Ingham Line) Pest Boards; the Hambledon, Goondi, Mourilyan and Macknade voluntary Boards; and the Mulgrave and Babinda mills.

Attendees who remained prominent in Pest and Disease Control Board matters for many years included George Wilson (then South Johnstone supervisor and later BSES entomologist), Eric Fox (then Mourilyan supervisor and later with Tully and Babinda), Ken Gard (CSR Technical Officer, Macknade), and Reg Mungomery (later O/C, Entomology and Pathology Division in BSES) who soon took over the organisation of Conferences from Arthur Bell.

There was no agenda but delegates were invited to discuss the rat, grub and beetle borer problems. They were also asked to pool their collective knowledge, suggest research which needed to be done, criticise BSES investigations where necessary, recommend legislation which could improve pest control, and look at how Boards could cooperate to improve the overall pest control situation.

A major result of this Conference was the BSES decision to have entomologist W A (Bill) McDougall investigate rat biology and control in North Queensland, to add to the information already gathered by CSR technical staff at Macknade.

The 2nd Conference (June 1936) was at Meringa Sugar Experiment Station. All 11 northern Boards or mills present in 1935 were again represented. In addition, invitations were extended to all remaining Boards in the Burdekin and Central Districts, of which Invicta (Giru), Pioneer, Mackay and Plane Creek Boards were represented. A total of 26 Board representatives and six BSES officers attended, and written progress reports on rats, grub control and beetle borers were presented as a focus for discussion.

The Conference resolved itself into a Standing Committee on Pest Control, and agreed to meet annually under the chairmanship of one of the delegates. W C Griffin from Mulgrave mill was elected as chairman. A sub-Committee was appointed to draw up rules for the conduct of future Conferences.

The 3rd Conference (May 1937) was again held at Meringa, with 25 delegates from 15 Boards and six BSES representatives. Rules for the conduct of Pest Board Conferences were adopted, with the objects of discussing all technical aspects of cane pest control; improving the efficiency and economy of control methods; encouragement of research on pest problems; and acting in an advisory capacity to BSES. These rules set the format of Conferences for the next 50 years. Seven short progress reports on grubs, beetle borers, rats, toads and quarantine were presented by BSES staff.

The 4th Conference (May 1938) was also held at Meringa, with 31 delegates from 17 Boards and six BSES representatives. Nine short formal papers, as distinct from progress reports, were presented for the first time. Most were by BSES staff but Pests Board supervisor Eric Fox had the honour of presenting the first paper by a supervisor.

Indicative of the value of the Conference was that the technical standard of the discussions, and the understanding of the delegates, had improved very considerably in each of the past 3 years.

A notable outcome, after long discussion and consideration of two papers on the subject, was the Conference decision that collection and payment for cane beetles was uneconomic as a method of control.

This practice was greatly reduced because of the motion, but it was another 10 years before BHC delivered the knock-out blow to beetle collecting. (It's interesting to note that beetle collecting gained a new lease of life in the mid-1990s as chemical control measures partly failed in the Burdekin. **We'd rediscovered the defective wheel, even though it had repeatedly been shown to be inefficient and uneconomic!**)

The 5th Conference (June 1939, Mackay) was held for the first time outside North Queensland. This introduced the system of rotating venues between Boards with towns capable of accommodating delegates, and electing the Chairman of a local Board as chairman of Conference.

Conference took a serious view of the dangers of introducing further pests and diseases from overseas, particularly from New Guinea, due to the increase in air transport. The inadequacy of plant quarantine

services had also been discussed in 1937 and 1938. A motion was adopted criticising lack of action by the Commonwealth Government, and urging “the creation of an independent plant quarantine service directed and staffed by trained agriculturalists.”

The 7th Conference (May 1941, Ingham) was the last one held during World War II – like so many other activities, Conferences were suspended until war’s end.

The 8th Conference (August 1946, Tully) was hurriedly organised as normality returned after war’s end. By this time, Reg Mungomery had taken over the organisation of Conference from Arthur Bell.

A major step was the decision “that provision be made in the Annual Proceedings of this Conference for tabulated records (of pest and disease data) provided by Boards”. This followed from a paper by Bill McDougall which made a plea for the recording of infestations, yield and economic losses due to pests and diseases, and the extent and cost of control. Much useful information had been lost in the past through failure to record it adequately, or at all.

He suggested that papers published in the Minutes should include accounts of useful research on pests, improved measures in pest control, and unusual happenings connected with pests and their control. However, the item of greatest importance was to produce annual statistical data on pest (and later disease) incidence, losses, control measures and costs.

The 9th Conference (May 1947, Innisfail) was notable for the first reports and long discussions on successful cane grub control by the insecticide BHC (benzene hexachloride, but widely known by its trade name Gammexane). This became a constant feature for several years. This year also saw the first ever attendance from a South Queensland Board (Moreton) at Conference.

The 10th Conference (May 1948, Cairns) provided the first tabulated “Summary of Cane Pest and Disease Control Data” in this case for the 1946 Crop. Reliability of data was acknowledged to be questionable in many instances, particularly for pests. It was agreed that BSES staff would assist supervisors in compiling the records, while Bill McDougall would develop schemes to help in loss assessment.

The 12th Conference (May 1950, Ayr) was the first in which discussion of various diseases formed part of the Proceedings. This followed from the only notable matter at the 11th Conference—a belated

amendment to the Conference Constitution allowing disease matters to be discussed. The status of Fiji, leaf scald and the recently confirmed RSD were outlined, with the object of improving existing control methods. RSD was soon to supplant grubs and BHC as the major topic at Conferences for many years.

The 13th Conference (May 1951, Ingham) saw the first unsuccessful attempt to coordinate the timing and location of Pest Board and Queensland Society of Sugar Cane Technologists (QSSCT) Conferences, in motions submitted by Maryborough and Moreton Boards. The object was to facilitate attendance by Board Supervisors and members at QSSCT Agricultural Section sessions as well as this Conference, and to minimise costs.

The 14th Conference (May 1952, Bundaberg) was the first to be held in south Queensland, with four southern Boards amongst the 17 in attendance from the total of 20 Boards in existence at that time.

The 15th Conference (March 1953, Tully) concentrated on the campaign against RSD, with information on the new hot water treatment tanks, and the experiences of Boards in their operation and in establishing healthy cane plots for use as planting material.

The 17th Conference (April 1955, Brisbane) was held to coincide with the first ever Refresher Course for Supervisors on diseases and pests, held at the BSES Pathology Farm. All 22 Boards were represented, the first time that all Boards had attended a Conference, while observers from CSR involved in pest and disease control operations in New South Wales attended for the first time. A major subject for discussion was the inadequacy of many HWT tanks in maintaining the standard temperature in the setts being treated.

The 19th Conference (April 1957, Ayr) saw a concerted effort by Boards in the Innisfail/Tully area to have the first plant – Giant Sensitive Plant (GSP) – declared as a pest under the SES Act. This would allow Boards to legally expend funds and carry out control work on GSP, which was now causing great problems in cane fields and spreading rapidly.

The 20th Conference (March 1958, Bundaberg) saw the introduction of formal Agenda motions from Boards on any matters pertaining to their Powers and Duties. This had been possible previously but had not been used to any extent. Boards quickly learnt to use Agenda motions to increase their lobbying power on matter of interest.

The 22nd Conference (April 1960, Ingham) saw the second unsuccessful attempt to coordinate the timing and location of CPDCB and QSSCT Conferences. All papers would form part of the QSSCT Agricultural Section sessions, but there would still be a quite separate Pest Board Conference dealing with business matters. The motion was lost but received more support than in 1951.

The 24th Conference (April 1962, Tully) debated the third unsuccessful attempt to combine CPDCB and QSSCT Conferences. Although two-thirds of the votes were against the motion, overall opposition to the idea was less vocal.

The 29th Conference (May 1967, Innisfail) brought an end to the long saga of coordinating the timing and location of CPDCB and QSSCT Conferences.

A motion to negotiate the introduction of combined agricultural paper sessions for the Conferences was carried by a good margin. Subsequently, the outcome of the negotiations was presented to all 20 Boards for consideration, and 17 were in favour. Major factors were (i) the increasing technical knowledge required of Board staff and members to carry out their duties; and (ii) the difficulty in getting relevant papers for Pest Board Conference, with authors preferring to have papers in a recognised publication such as the QSSCT Proceedings.

The 30th Conference (April 1968, Ingham) was the first of the new-style meetings. The integrated agricultural paper sessions were held on a Thursday in Townsville during the QSSCT Conference, and were well attended by Pest Board delegates. The formal Pest Board Conference was held on the Friday in Ingham. It dealt with domestic and administrative operations of Boards, including Agenda motions from Boards. The Summary Table of Pest and Disease Data for the previous year's crop was presented as usual, but was accompanied by a resume of the incidence of pests and diseases and investigations carried out on them during the year.

This Conference also marked the retirement of Reg Mungomery from BSES and from the job of "coordinator" of Pest Board Conference—arranging Conference details, ensuring there were adequate papers, and ensuring the Conference itself ran smoothly. He had attended the first meeting in 1935, and took over the organisation of Conferences from Arthur Bell in 1946 after the World War II recess.

The 32nd and 33rd Conferences (April 1970, Mackay; April 1971, Cairns) saw attempts by a few Boards to reverse the decision to join with QSSCT for paper sessions. These motions were lost by large margins.

The 35th Conference (May 1973, Innisfail) had an enlarged Technical Session, formed by adding 2 or more symposia on pests and diseases to the Pathology and Entomology Reviews, and the Pest and Disease Control Data for the previous crop. The symposia functioned as a type of refresher course on currently relevant subjects, with formal inputs required from several supervisors as well as BSES staff.

The 37th Conference (March 1975, Brisbane) broke new ground with the holding of a Special Business Session chaired by the BSES Director. It was attended by 3 of the 4 Sugar Experiment Stations Board members, one canegrower and one millowner representative from each statutory Board, and a limited number of BSES staff. This followed on from the appointment of Brian Egan as Coordinator of Cane Pest and Disease Control Boards in 1974.

Presentations highlighted the great disparity which existed between the 23 Boards over a wide range of financial and operational issues. Discussions were wide-ranging and allowed delegates' viewpoints to be given to SES Board members and senior BSES staff on matters affecting finance; powers and duties of Boards; Board members' obligations, fees and allowances; staff salaries, allowances and training; and the future vision for Boards.

In the main Business Session, problems arising from the Fauna Conservation Act of 1974 were of major concern. Native fauna damaging cane – rats, wallabies, coots and cockatoos – could no longer be declared pests, and permits were required for their destruction.

The 39th Conference (April 1977, Bundaberg) commenced with the third and final Special Business Session. The 1975 and 1976 Sessions had been very useful for both Pest Boards and the SES Board, which advised the Minister for Primary Industries on Pest Board control functions. Pest Board members now had a better appreciation of how the SES Act, the Minister and the SES Board governed their operations. In turn, they were able to obtain some changes in the Act and various procedures which made for smoother operations and less irritating delays.

The 40th Conference (April 1978, Ayr) discussed three items that had been under review for a few years, but which were becoming more important:

- The possibility of **amalgamating Pest Boards and Productivity Committees** was argued at length before a motion to investigate this was lost.
- The **frequency and timing of annual conferences** were also argued at length before a motion for biennial conferences was lost.
- **Destruction of cane on unassigned land** was a major problem which had not been resolved in Special Business Sessions. Several Boards were keen to have compulsory destruction enforced, but the legal and BSES positions were that this approach could have undesirable repercussions.

The 41st Conference (May 1979, Mackay) introduced a new half-day refresher course session for supervisory staff, to update them on specific items of current importance. Another attempt to introduce **biennial Conferences**, with alternating technical meetings for supervisors during ASSCT Conferences, was defeated.

The 42nd Conference (May 1980, Innisfail) considered two reports on amalgamation and cane destruction, requested by the 1979 Conference –

- **Amalgamation** of Pest Boards and Productivity Committees was not possible unless changes were made to several sections of the SES Act. This would require approval by grower and miller organisations and convincing Government of the desirability. Any further action on this should emanate from grower and miller organisations rather than Pest Boards.
- **Destruction of cane** on roadsides and rail sidewidths had been accepted by Main Roads and Railways Departments as their responsibility. Central Sugar Cane Prices Board was asked to make confirmation of transferred assignment subject to destruction of cane on the old assigned area, with Pest Boards willing to carry out the necessary inspections.

The 44th Conference (April 1982, Ingham) saw a renewed push for action on abandoned cane, following the failure to obtain Central Sugar Cane Prices Board support for compulsory destruction of cane on land where assignment is transferred. A deputation to the Minister from

three Boards was agreed, and stronger action was sought from the SES Board.

The 46th Conference (May 1984, Mossman) was held during a depressed economic period for the sugar industry, and several Boards were not represented. The need to hold annual conferences was queried by the Director, at the request of the SES Board. Delegates were not in favour of dropping the 1985 Conference, particularly as Boards had not considered their attitude on the question.

The 47th Conference (May 1985, Bundaberg) had a very full discussion on the future of Conference, ranging from maintaining the status quo to radical restructuring of content for a triennial meeting. It was finally agreed that Conference would be held every second year. In the alternate years, Board staff and members were encouraged to continue ASSCT attendance, with regional symposia to consider matters of local importance and improved efficiency of administration operation.

Concerns were also expressed at how Pest Boards were to be dealt with in the Sugar Industry Review Program, in particular with regard to possible restructuring, amalgamation with Productivity Committees, and amended or expanded powers and duties.

The 48th Conference (April 1987, Mackay) re-affirmed Boards' support for retaining their present autonomous form, and asked that they be consulted before any changes are considered in the Regulations. New administrative requirements introduced by the Government, eg Financial Administration and Audit Act, were discussed and have caused more work for Boards. A committee of four Board members plus the Pest Board Coordinator was set up to report to the 1989 Conference on the frequency and content of conferences and staff training.

The 49th Conference (May 1989, Tweed Heads) was the first to be held in New South Wales, and was attended by all statutory and voluntary Boards in Queensland and New South Wales. Brian Egan was elected as Chairman, the first time since Arthur Bell chaired the initial Conference in 1935 that a BSES officer had chaired it. This followed his recent retirement as Pest Board Coordinator after 15 years in that position.

A major change in Pest Board powers and duties, to incorporate productivity functions, had been recommended by industry reviews. The implications of this were discussed at length, including the need for more

training. Control of all weeds had been included in Board powers in late 1988 and the first round of BSES training for Board staff had just concluded.

The report on frequency and content of conferences and staff training sessions was discussed and adopted. Conference should be held biennially to coincide with ASSCT, with adequate time for discussion of specific items and significant points which arose since the previous Conference, and elimination of motions which required only administrative action. Formal Regional Conferences should be held in the alternate years, provided there was a need. Regional and state-wide training courses should be increased in length and frequency to give staff the necessary technological background and ability to advise on new subjects.

The 50th and last Conference of Cane Pest and Disease Control Boards (May 1991, Bundaberg) was held in May 1991. The Sugar Industry Act 1991 replaced the SES Act, and Boards will have a new title to emphasise that productivity functions will be an important part of their new powers and duties.

A Workshop on “The future role of Cane Protection and Productivity Boards” gave members and staff the opportunity to learn more about the issues and problems facing them. It was agreed that Conferences would continue, the first to be held in 1992, and with BSES continuing to coordinate them.

Finale: The closing of the 50th Conference was a significant milestone along the road, because of the change in the name and the much wider functions of the Boards. Probably of equal significance was the amendment to the Conference Constitution at the 11th Conference in 1949 to allow disease matters to be discussed.

Postscript: Five Conferences of Cane Protection and Productivity Boards were held, the first in Mackay in May 1992, with subsequent meetings in 1994, 1996, 1998 and 2000. Much of the subject matter and many of the faces continued on from the old “Pest Board” days, as you would expect. To end an era, the Sugar Industry Act was amended in 2003 so that all statutory CPP Boards were dissolved by 30 June 2004, and could be replaced by private bodies.

14.2 Organisation of Conferences by BSES

Cane Pests Boards were set up under the SES Act for individual mill areas, but there were no formal linkages between Boards.

BSES, in its own right under the Act or on behalf of the Minister for Agriculture, provided some direction to the statutory Boards and acted as “big brother”. When the Advisory Board of BSES decided in 1935 that “Pest Boards Conferences” were desirable, the organising job naturally lay with BSES.

Initially, the job just involved organising the Conference – setting the date and venue, advising Boards and preparing Minutes. Later as Conference grew, it also involved seeking papers, chasing up P&D data returns and collating results, preparing agenda, attending to motions and following them up subsequently, inviting speakers on current matters of concern, assisting the host Board with venue and field tour arrangements, etc, as well as acting as the focal point for enquiries throughout the year.

A.F. (Arthur) Bell organised and chaired the 1st Conference in 1935. As the highly regarded BSES Deputy Director, he had the necessary prestige to carry the job through. In addition, he was not involved directly and on a regular basis with the work of Boards as were the BSES entomologists. He continued as conference coordinator until 1941, after which conferences were suspended until war’s end.

R.W. (Reg) Mungomery was a long time BSES entomologist, stationed at Meringa, when the 1st Conference was held in 1935. He later assisted Bell in organising the meetings, but became the coordinator in 1946 when conferences were resumed.

He soon became Officer in Charge, Entomology and Pathology Division, an ideal position to coordinate pest and disease control activities and the Conference. He remained as coordinator until his retirement in 1968, although Graham Hughes had attended to much of the disease content for some years.

C.G. (Graham) Hughes was a BSES pathologist since the mid-1930s, and had attended most Conferences since 1950 when diseases were first discussed. He assisted Mungomery for many years prior to becoming coordinator for the 1969–73 period.

B.T. (Brian) Egan was a BSES pathologist since the 1950s who spent over 15 years at Meringa and two years in Bundaberg as field pathologist, in frequent direct contact with Boards. He was appointed as the first Coordinator, Cane Pest and Disease Control Boards in 1974, and so was conference coordinator from 1974 until 1989 when he moved to other responsibilities within BSES. He assisted with organisation of the 50th and last Conference in 1991.

14.3 Papers Presented at Conference

The 1st Conference had no written material tabled but discussed pest problems; the 2nd and 3rd had written progress reports to focus discussions; while the 4th saw the introduction of formal papers, a total of nine being presented. One of these was written by Board supervisor Eric Fox.

A total of 268 papers were presented over the period 1936–1967, an average of 9.5 papers per Conference; of these, 181 were on pest related matters and 87 on disease related matters. All papers were printed in the Minutes and Proceedings of the Conferences, and a separate Author/Paper Index for the 1936–1965 period was issued in late 1965. Copies of the Minutes and the Index are held in BSES libraries, as well as in other places.

There were 61 different authors, either singly or in conjunction, for these papers. The majority of authors were BSES officers, with only a few Pest Board staff or members writing more than 1 or 2 papers. From 1960, it became increasingly difficult to get relevant papers of adequate quality and number for Pest Board Conferences. Few papers were forthcoming from Boards, and BSES officers preferred to have papers in a recognised publication such as the QSSCT Proceedings. Eventually, in 1967, Mungomery advised Conference that nominated BSES staff would no longer be instructed to prepare papers for Conference, but could do so if they wished. This would have resulted in very few papers for 1968. It was a potent factor in the decision of the 1967 Conference to coordinate with QSSCT to hold combined agricultural paper sessions in future.

14.4 Formal Conference Agenda Motions

It was not until the 20th Conference in 1958 that formal motions were sought from Boards on any matters relating to their Powers and Duties. These appeared on the Agenda sent to Boards a month or so prior to Conference. This allowed delegates to participate in discussions with knowledge of their Board's opinion on the matter. Motions had come out of Conferences previously, usually arising from scheduled discussions, but they were relatively few in number.

Boards quickly learnt to use these motions to increase their lobbying powers on matters of concern to them. Not surprisingly, they also tried to extend the boundaries on what was relevant to their Powers and Duties. Sometimes this was quite legitimate, but more often it was not. A good example of the former was the attempt in 1957 and

subsequently to have the noxious weed giant sensitive plant (commonly called GSP) declared as a pest of sugarcane under the S.E.S. Act, the first non-parasitic plant to be so declared. This was an extraordinarily noxious weed spreading rapidly in and around north Queensland pastures and canefields.

Examples of the subject matter for motions are:

- **Board Powers and Duties:** Fees and allowances for travel and meetings; Act and Regulation amendments affecting Boards; Sugar Industry Reviews and future role of Boards; training courses, salaries and superannuation for supervisors; Conference timing and format; internal and external quarantine.
- **Pests:** Control of grubs, rats, pigs, soldier fly, wallabies etc; permits to shoot animal/bird pests; bounty payments; Fauna Conservation Act permits and objections; insecticides, phase out of organochlorines; agricultural chemical usage in cane, environmental safety, pollution effects; sale of chemicals by Boards and registration; Act change to work on weeds.
- **Diseases:** Control of RSD, Fiji, leaf scald, etc; RSD tests and surveys; HWT tank design and temperature control; clean plant schemes; plant source inspections; destruction of abandoned cane; harvester and machinery sterilisation; quarantine in Torres Strait against exotic diseases.

14.5 Data on Pest and Disease Incidence

The presentation of annual collated data on pest and disease incidence became a standard item at Conferences from the early 1950s. They provided very valuable information on the ebb and flow of pests and diseases for many projects. They also help us to understand the historical significance of some pests, and to estimate what losses could occur in future if control measures fail. Unfortunately, the information available before the late 1940s is fragmentary, although it is possible to reconstruct some broad-brush figures for some pests such as greyback grubs and rats.

BSES entomologist and rat researcher W. A. (Bill) McDougall first raised the matter in a paper entitled “Records” at the 1946 Conference, which carried a motion “That provision be made in the Annual Proceedings of this Conference for tabulated records (of pest

incidence) provided by Boards”. McDougall followed this up at the 1948 Conference with a paper on “Tabulated Records”.

McDougall lamented the “vanished data” which existed for a few major cane pests, which would have been invaluable in his work. In 1932, he inspected old cash books of voluntary pest boards previously functioning in the Mackay district and took out data, but these are now lost in files (and the originals vanished). He and Mackay Board supervisor Stan Greenaway extracted data from its files and records for the 1930–46 period on yield losses from grubs, weight and cost of beetles and grubs collected, area fumigated and cost of Board subsidy to growers. (McDougall, W.A. “Records”, QSSCT 13th Conf., 1946).

He stressed that Conference Proceedings would be the ideal place for recording pest data. The presence of Boards in most areas would now allow for a greatly improved collection of data at only a small additional cost of effort and money. Conference was enthusiastic.

In the 1948 paper, tabulated data on the 1946 crop were presented. McDougall was still positive, but discussed the problems which arose in collection of data by supervisors, his problems in auditing and presenting the data, and suggestions for improvement. He split the Queensland cane area into six zones (Mossman-Babinda, Innisfail-Tully, Herbert, Burdekin, Central, Southern), which continued to be used up to 1991.

There was considerable discussion at the Conference, which carried a motion that a scheme for assessing losses be prepared by McDougall in association with supervisors, and put into operation within three months.

The problems initially identified by McDougall continued to be problems for the next 50 years, eg too much guesswork, not enough first hand knowledge of problems, no standard methodologies for data collection, no or insufficient collaboration with the local BSES officer, poor clerical compilations, the need for the BSES final compiler to audit all data sheets submitted. However, over the years, the methodologies were improved, the supervisors became more experienced through sessions at Refresher Courses, the BSES staff auditors had more information available to them, etc.

How these were done does not concern us here – suffice to say that the data presented at Conferences are the most comprehensive and accurate available to any sugarcane industry, and it all started at a Conference in 1946.

14.6 Changes in Conference timing and format

Boards generally were happy with Conference format by 1950 – it was held annually, could discuss and vote on all pest and disease matters, and a reasonable number of short papers were presented. At the same time, the annual QSSCT Conference was attempting to build up the number of papers and members for its Agricultural Section.

14.6.1 Coordination of Pest Board/QSSCT Conferences

As supervisors were now involved with a wide range of pests and diseases impacting on canegrowing, they needed to have a greater understanding of cane agronomy and soil factors. Similarly, Board members would benefit from a greater exposure to R&D and extension papers. Some Boards did send the supervisor and maybe a Board member to QSSCT Conference, but this usually meant additional costs and time for two separate trips to the Conferences.

Unsuccessful attempts to coordinate the timing and location of the two Conferences were made by several Boards in 1951, 1960 and 1962. All motions were defeated but support for the idea was growing.

The matter came to a head with a further motion at the 1967 Conference, when Mungomery advised that BSES papers would be presented in future at QSSCT Conference, not here. The vote overwhelmingly favoured negotiation with QSSCT on timing. All papers would form part of QSSCT Agricultural Section sessions, while a Pest Board Conference dealing with business matters would be held conjointly at a mutually suitable time and site.

In 1970 and 1971, attempts were made to reverse the decision but these lost by large margins. There was some dissatisfaction on occasions with QSSCT over poor arrangements and insensitivity to Pest Board Conference needs. However, in 1976 QSSCT changed its own format – this suited Boards and there were no further attempts to break away.

The majority of Boards became members of ASSCT (the successor to QSSCT) and/or support the supervisor as a member. Attendance by supervisors and Board members increased, and this helped to increase the technical knowledge and competency of all.

14.6.2 Annual or Biennial Conferences?

During the mid-1970s, some Boards began to question the need for conferences every year. The appointment of a Coordinator had reduced some of the isolation they felt, the three Special Business Sessions held in 1975–77 had ironed out many problems, and attendance

at QSSCT provided the technical aspects and discussions. Costs were also a consideration, and these subsequently assumed greater importance. However, most Boards were not yet willing to depart from an annual format which had given them a good forum and which they enjoyed. Twelve months were not too long to wait unless the matter was really urgent, but two years?

Motions to introduce biennial Conferences were defeated in 1978 and 1979, with the latter adding that technical sessions for supervisors be held at ASSCT Conferences in the alternate years. Another motion in 1983, which also proposed regional symposia for Boards in the alternate years, was also defeated but with a lesser margin.

Economic conditions for the sugar industry were quite depressed in 1984, and several Boards decided not to send delegates. On behalf of the SES Board, BSES Director Owen Sturgess queried the need to hold annual Conferences and suggested that the next Conference could be in 1986. However, delegates were not in favour of this, particularly as their Boards had not re-considered their position on the matter. It was agreed to schedule a discussion on this in 1985.

The 1985 Conference finally agreed to a biennial format, with regional symposia in the alternate year to consider matters of local importance. Board staff and members were encouraged to attend ASSCT Conference every year if possible. These recommendations followed from a very long discussion on a range of options – from maintaining the status quo to a radical restructuring of content for triennial meetings.

14.7 Attendance by New South Wales Boards

Conference was regarded as a Queensland body since it was set up in the 1930s to act in an advisory capacity to BSES. Since its inception, Conference attendance was open to delegates from statutory and voluntary Boards in Queensland. From time to time, visitors from other groups in the sugar industry were admitted by vote of the Conference.

The New South Wales mills were owned by CSR so CSR technical staff looked after all pest and disease control matters until Boards were formed there in the late 1950s and 1960s.

When Pest Board Conferences were held in Brisbane in 1955, 1964 and 1975, and in 1968 when the first joint Pest Board/QSSCT paper sessions were held, New South Wales technical staff and Board members attended Conference sessions by invitation. From 1981, New South

Wales Pest Board delegates usually attended Conference, mainly because of the change in ownership from CSR to the New South Wales Sugar Milling Cooperative.

**Table 14.1—CANE PEST AND DISEASE CONTROL BOARDS
CONFERENCES, 1935–1991**

No.	Town or city	Meeting place	Date	Chairman
1st	Townsville	Dept. of Agriculture	24/10/35	A.F. Bell
2nd	Meringa	Sugar Experiment Station	25/6/36	W.C. Griffin
3rd	Meringa	Sugar Experiment Station	13/5/37	W.C. Griffin
4th	Meringa	Sugar Experiment Station	25/5/38	W.C. Griffin
5th	Mackay	Canegrowers Exec. Office	9/6/39	J.J. Hedrick
6th	Ayr	Caledonian Hall	12/6/40	H.V. Hanson
7th	Ingham	Shire Hall	1/5/41	A.B. Farquahar
8th	Tully	Sunkist Cafe Hall	29/8/46	J.A. Winter
9th	Innisfail	Blue Bird Cafe Hall	8/5/47	W.L. Poustie
10th	Cairns	City Council Chambers	12/5/48	M. MacKellar
11th	Mackay	Parish Hall	6/4/49	J.C. Collier
12th	Ayr	Caledonian Hall	16/5/50	P. Sayers
13th	Ingham	Shire Hall	17/5/51	R.V. Pearson
14th	Bundaberg	Parish Hall	7/5/52	F. Courtice
15th	Tully	Sunkist Cafe Hall	18/3/53	W.C. Kohn
16th	Mackay	Parish Hall	29/4/54	D.A. McIntosh
17th	Brisbane	Lord Mayor's Reception Room	20/4/55	W.H. Dean
18th	Innisfail	Shire Hall	5/4/56	S.W. Dickson
19th	Ayr	Anzac Memorial Club	16/4/57	P. Sayers
20th	Bundaberg	Canegrowers' Meeting Room	27/3/58	B. Anderson
21st	Cairns	City Council Chambers	8/4/59	J.R. Warner
22nd	Ingham	Shire Hall	27/4/60	R.V. Pearson
23rd	Mackay	Hotel Pacific, Eimeo	10/4/61	W.M. Crichton
24th	Tully	Sunkist Cafe Hall	9/4/62	G.F. O'Hanlon
25th	Ayr	Anzac Memorial Club	22/4/63	P. Sayers
26th	Brisbane	Canegrowers' Building	12/3/64	J. Harley
27th	Cairns	City Council Chambers	27/4/65	J.R. Warner
28th	Bundaberg	Civic Centre	26/4/66	B. Anderson
29th	Innisfail	C. of E. Memorial Hall	2/5/67	H. Kennedy

No.	Town or city	Meeting place	Date	Chairman
30th	Ingham	Shire Hall	19/4/68	R.V. Pearson
31st	Maryborough	R.S.L. Hall	18/4/69	T.W. Gee
32nd	Mackay	M.U.I.O.O.F. Hall	8/4/70	J. Fordyce
33rd	Cairns	Methodist Hall	20/4/71	J.B. Murday
34th	Bundaberg	Canegrowers' Building	11/4/72	S.E. Toft
35th	Innisfail	St Alban's Hall	1/5/73	P. Borgna
36th	Townsville	Dalrymple Hotel	16/4/74	R.T. Hughes
37th	Brisbane	Canegrowers' Building	12-4/4/75	E.G. Huth
38th	Proserpine	Airlie Beach	7-9/4/76	J.M. Fuller
39th	Bundaberg	Canegrowers' Building	14-6/4/77	E.H. Churchward
40th	Ayr	Canegrowers' Building	20-1/4/78	R. Mann
41st	Mackay	Canegrowers' Building	3-4/5/79	J. Fordyce
42nd	Innisfail	R.S.L. Hall	1-2/5/80	J.T. Logan
43rd	Bundaberg	Canegrowers' Building	14-5/5/81	R.K. Strathdee
44th	Ingham	International Club	22-3/4/82	A. Roati
45th	Sarina	Bowls Club	21-2/4/83	J.E. Petersen
46th	Mossman	Golf Club	3/5/84	B.J. Berzinski
47th	Bundaberg	Canegrowers' Building	2/5/85	N.E. Bebendorf
48th	Mackay	Canegrowers' Building	30/4/87	J. Fordyce
49th	Tweed Heads	Twin Towns Services Club	5/5/89	B.T. Egan
50th	Bundaberg	Canegrowers' Building	13/5/91	B.A. McLellan

Chapter 15 Pest and Disease Control work by Boards, an overview for the period 1923–2001

PESTS AND DISEASES caused major problems in the Queensland sugar industry for many years prior to the establishment of Cane Pests Boards in 1923 and Disease Control Boards in 1938. These were covered briefly in Chapter 2.

A broad overview is given below on Board inputs to control campaigns for each of the important pests and diseases, while a short history of problems in each Board area is given in Chapter 16. Some of minor importance overall will also be mentioned, especially if they assumed major importance in particular areas.

BSES and Boards were partners in these campaigns, but only the contribution by the Boards will be covered – inclusion of the full BSES contribution would require a much lengthier report. BSES provided the technical research, knowledge and direction, legislative backing, resistant varieties etc. The Boards provided the manpower, local knowledge and finance, helped marshal local support, and carried out much of the local on-farm work needed. All these things were necessary to ensure the final success.

15.1 The activities of Boards included:

- farm, district and area surveys
- specific searches for particular diseases and pests, sometimes involving large numbers of inspectors (eg for Fiji disease)
- roguing or other destruction of cane with certain diseases
- inspection of plant sources on farms, including compulsory inspections for certain diseases in some mill areas
- provision of nucleus stocks of disease-free cane, either by heat treatment of cane for canegrowers or from special nucleus seed plots
- conducting much larger clean seed plots to provide commercial planting material in certain disease control campaigns (eg against Fiji and leaf scald)
- advice to growers on control of diseases and insect, animal or plant pests
- purchase and resale of approved pesticides, including payment of subsidies on a few specific pesticides

- payment of bonuses on certain animal pests
- purchase of cane beetles (from 1923 to 1947)
- conducting coordinated rat-baiting campaigns, land based or aerially.
- provide BSES with pest and disease data, pesticide usage and estimated yield losses for the crop year

15.2 Training for supervisory staff

Board supervisors and other staff needed to be competent in the identification of diseases and pests, and in the relevant control measures, so BSES ran various training courses. The first formal course on disease identification and inspection techniques was held in Bundaberg in 1941, dealing mainly with Fiji and downy mildew. The first of four major courses was held at the BSES Pathology Farm in Brisbane in 1955, where all 22 Boards plus the NSW boards sent staff. The attendees were exposed to a wide range of diseases and mutant stools showing symptoms which could be mistaken for diseases, and there were oral presentations as well. In the 1960s, BSES also undertook to run training courses for cadet supervisors employed by Boards, during which they spent time at the Pathology Farm and several Experiment Stations “learning the ropes”, and were examined at the course conclusion.

From 1968 when Pest Board Conference was first aligned with QSSCT Conference, short refresher sessions were held from time to time in conjunction with them. In 1973, two symposia were added, functioning as refresher courses for all delegates on currently relevant subjects. In 1979, a half day refresher session specifically for supervisory staff was added. From the late 1970s, Boards also sought increases in length and frequency of training courses for staff to upgrade their technical competence, as more matters fell within their sphere. As examples of the BSES response, courses were held in 1986 at Mackay and Townsville (1 day each); in 1987 at Mackay (½ day) and Bundaberg (2 days); in 1988 at Bundaberg(2 days); and in 1989 at Innisfail, Mackay and Bundaberg as weed control workshops since weeds had been added to the list of Boards’ responsibilities. Boards also provided considerable assistance to BSES over the 1942–45 period of World War II in continuing variety selection trials, as many BSES staff were absent.

15.3 Pest Control Work by Boards

THE major pest problem by far for canegrowers and the new Cane Pests Boards when formed from 1923 were cane grubs, with rats an

increasingly important second in some areas. Minor but sometimes annoying pests at that time included wallabies, wild pigs, beetle borers, wireworms and occasional locust plagues, varying greatly from area to area in importance.

15.3.1 Canegrubs

Greyback and **Frenchi grubs** were endemic in the area from Sarina to Mossman, and their larvae (grubs) were the main culprits in Northern and Central Districts from the 1880s. **Childers grubs** and other southern grubs were the major problem in the south from the 1890s, were found only in Isis and parts of Bundaberg area, and had been the major focus for southern voluntary Funds up to the 1920s.

Statutory Boards, first set up in 1923 or later, inherited a system of purchasing beetles (and grubs in some areas) in the belief or hope that it might reduce grub numbers and hence crop damage. Injection of carbon bisulphide around the stools to kill grubs had been in desultory use since the early 1900s, but the injectors in use were unsatisfactory, the work was time consuming and difficult, and results were often poor. Removal of certain trees on which greyback beetles fed between emerging and laying eggs was tried in some areas with little success. Overall, the sugar industry was at its wit's end and ready to try anything that might help! The cane toad introduction in the 1930s was an example of this, with Boards assisting in their spread for a year or so until it became obvious that toads were useless for that purpose.

All Boards were actively involved in control measures, particularly promoting soil fumigation with paradichlor in carbon bisulphide by subsidising chemicals and hiring better hand injectors cheaply. Some Boards continued to support greater removal of feeding trees, and "Fox's Folly" – the destruction of all trees on the Basilisk Range at Innisfail – was a highly visible example of its failure. Some Boards even hired out flame throwers to defoliate nearby favoured feeding trees.

The arrival of BHC insecticide for grub control in the late 1940s was a godsend. The Boards made major efforts to maximise its use and effectiveness through bulk purchasing BHC, selling it to growers at subsidised prices, hiring out application equipment, helping to research the best application methodology. Work on grub control continued up to the 1990s – helping to refine placement technique, changing over to controlled release Suscon Blue from the organochlorines after their

banning, and sorting out problems with Suscon as grub damage began to make a comeback from the late 1980s into the 1990s. There was also involvement in the testing and approval of newer insecticides

As greyback grubs were controlled successfully, and better varieties allowed more ratoons to be grown, Frenchi grubs increased in importance in these areas. Other species of grubs were also identified as cane pests. As each had distinct life cycles and varied in the way they attacked cane, Boards had continuing work to do in advising growers on controls.

15.3.2 Rats

Rats were the No 2 cane pest from the early 1900s in the mill areas north of Townsville and in the Central District, but were of little importance in the Burdekin and South Queensland. George Wilson, South Johnstone supervisor in 1929–1948 and then BSES entomologist, recalled the development of rat control measures for Boards (Aust Canegrower, Sept 1982, p 71). “The main devices for rat control in the 1920s were barium carbonate biscuits baked in an oven in the Board’s shed; a mixture of strychnine, flour and crushed corn compounded with melted tallow; and bread spread with phosphorus syrup. These had some disadvantages – rats found the gritty barium carbonate unpalatable, about 30% of rats were immune to strychnine, and the phosphorus/bread baits were unpleasant, sticky and dangerous”. The coordinated baiting campaigns involved a lot of work for Board staff in making and distributing the baits.

George continued “I heard in 1930 of the thallium sulphate wheat baits used in Hawaii, and we began to make them in the Board shed and field test them. Commercial supplies of hand-packeted baits soon became available, but it was not until the 1950s that machine-packeted baits were developed. Thallium/wheat baits were the standard method of control in Queensland for many years.”

There was also another reason for controlling rats—**Weil’s Disease**. The rat situation had built up to a crisis point in the Herbert area by 1934, with very large populations damaging cane stalks. Ominously, increasing numbers of field workers and cane cutters contracted the debilitating Weil’s disease, the causal organism of which is spread in rat urine and faeces. Consequently, the Queensland Health Department formulated a “Grand Plan” to eliminate rats in the Herbert which involved extensive poisoning campaigns and harbourage destruction,

funded in part by a Special Levy on the sugar industry as outlined in Chapter 6. Inevitably, serious disagreements arose between CSR, local Boards and Health Department officials on methods and timing of baiting, overall control of the campaign, and reimbursement for baits laid without prior approval and supervision by Health Department. A lot of hard work resulted in good rat control, but the “Grand Plan” was never repeated.

Boards in all affected areas had a continuing rat control work program. This involved monitoring rat populations to determine if and when baiting needed to be done; the purchase of bulk stocks of baits to be given to growers or supplied at subsidised rates; and training and encouraging growers in good rat control measures. Laying baits in grids across the field was the most effective method, but this was time consuming and not the pleasantest job. So aerial rat baiting was developed by CSR in the Herbert in the mid-1960s to give a good coverage within blocks, and soon became the preferred method in all areas. Boards consequently were involved in planning and running an annual coordinated aerial campaign for the whole area.

As rats are native animals, it became necessary to negotiate permits for their destruction from the mid-1970s. This involved more work for board staff in monitoring infestations, supervising applications and in reporting results. There was also involvement in testing and approval of newer pesticides.

15.3.3 Soldier fly

Soldier fly developed as a major pest problem in the Bundaberg area from the 1950s, and subsequently in the Mackay area in the 1960s and 1970s. The larvae caused poor ratooning with consequent large yield losses as their populations exploded over large areas in the two districts. BSES developed control measures with BHC, which was not fully effective, and subsequently with dieldrin, which became the only recommended chemical in 1966 until it was banned in the 1980s together with all other organochlorines.

Board staff in these areas were initially involved in surveys to identify infested areas, the identification of heavily infested blocks, and in recommending ploughouts and working with growers on control measures. They also assisted BSES in the trial work with insecticides. Boards began to bulk purchase dieldrin from formulators, and resold to growers at substantial cost saving. A subsidy of 15% of cost was also

introduced by some Boards for much of this period. This continued through the 1980s, until dieldrin use was banned. Boards were then involved in the search for other insecticides and other control measures for soldier flies, and in monitoring the overall situation in previously infested areas.

15.3.4 Minor insect/animal pests

Feral pigs caused minor damage from the early 1900s, but became more important in northern areas as the industry expanded from the 1940s into pig habitat and their numbers increased. Boards supported shooting and trapping by payments for pig scalps, and subsidised netting fences in some areas. **Wallabies** caused considerable damage at times in drier areas and some Boards paid for scalps. This practice ended in the 1970s when all native fauna were protected.

Severe **locust** plagues came to the Burdekin and some other areas on a few occasions, requiring extensive insecticidal spraying, while **wireworms, nematodes, margarodids, cicadas, funnel ants, beetle borers, armyworms** and **cicadas** all caused problems at times.

15.3.5 Plant pests

Plants were not declared as pests under the SES Act initially, so Boards could not spend time and funds on weed control. In 1958, however, the extraordinarily noxious weed, **giant sensitive plant(GSP)** was declared a pest under the Act. GSP was spreading rapidly in the Wet Tropics and into canefields. Northern Boards joined state and local government efforts to reduce existing infestations and prevent further spread. This required constant vigilance by Boards to prevent seeding, maintaining pressure on government and shire councils, and helping police anyone wanting to move sand and soil in affected areas. **Itch grass** was declared a cane pest in 1982 as heavy infestations were spreading in limited cane areas in the Burdekin. It was reduced to insignificance in a long inspection and weedicide campaign.

15.4 Disease Control Work by Boards

Three major disease problems faced the new Disease Control Boards in 1938, and a brief review of the situation follows. A major **gumming** disease epidemic in south Queensland climaxed in 1929, was controlled by 1935 by widespread plantings of the POJ and other resistant varieties, but was starting to spread in susceptible varieties in north Queensland. **Downy mildew** disease caused problems in some varieties in the Burdekin and Mackay districts by the end of the 1920s,

but was of little importance by 1935. It exploded in POJ2878 in Mackay in 1937 and 1938, and began a rapid build up in Bundaberg from 1937. **Fiji** disease caused some concern in the early 1930s in south Queensland, then subsided until it began to build up quickly in the POJ varieties from 1935. By 1938, the potential for serious losses was obvious to all.

15.4.1 Gumming disease

Gumming disease was known only from Mulgrave in early 1938 but susceptible varieties, mainly SJ4, were widely planted and a Hambledon outbreak soon occurred. Mulgrave, Hambledon and Mossman Disease Control Boards were set up to help control it by inspecting all susceptible canes, identifying diseased blocks, policing BSES quarantines and locating healthy plant sources of all varieties. By 1945, gumming (and SJ4) had been eliminated in Mulgrave and Hambledon, but a new outbreak was found in Mossman. This was soon controlled by similar actions, and the last known infected block in Queensland was ploughed out in 1950.

Gumming, a scourge of the Queensland and New South Wales industries since the 1880s, had at last been conquered. It was the first major disease known to have been eradicated from any country.

15.4.2 Downy mildew disease

By late 1938, downy mildew disease was the major disease in Queensland. It exploded from obscurity in 1935 following widespread plantings of the new “Java Wonder Cane” POJ2878 and other POJ varieties. Mackay Board was set up to help control downy mildew, while Bundaberg, Mossman, Hambledon and Mulgrave had that as a second major objective. Board operations involved inspection of all susceptible varieties; identification of diseased blocks and systematic roguing of diseased stools; checking BSES quarantines on cane, the planting of the alternative host maize, and ploughout orders on heavily diseased blocks; and locating healthy plant sources.

Major inspection efforts in 1938–45 brought the Mackay and Bundaberg epidemics under good control, while Board vigilance in north Queensland prevented any epidemic from developing. The last known diseased blocks in Mackay, the north and Bundaberg were ploughed out in 1943, 1949 and 1956 respectively.

Downy mildew became the second major disease eradicated from the Australian sugar industry, but remains a risk because of its abundant presence in Papua-New Guinea.

15.4.3 Fiji disease

Fiji disease was a serious problem in Bundaberg by 1938, and was building up in other southern areas. Consequently, Bundaberg, Isis, Maryborough and Moreton Boards were set up in 1939 to control it. By 1946, the situation was starting to deteriorate in Rocky Point area, so a Rocky Point Board was set up.

15.4.3.1 The 1937–1950 Epidemic

Intensive inspection and roguing campaigns were undertaken from 1938, more particularly in Bundaberg and Moreton where there was more disease, and importantly, more of the very susceptible POJ canes. Large areas were inspected (eg over 50,000 acres in Bundaberg in the peak year), thousands of diseased stools were rogued, many blocks were identified as heavily diseased and given ploughout orders by BSES, and restrictions were policed on the use of planting material within 20 chains (approx. 400 m) of known disease. Boards also assisted in promoting the use of resistant varieties.

These control campaigns in the 1930s to 1950s against Fiji and downy mildew diseases were a major victory for BSES and the disease control measures enacted in the Sugar Experiment Stations Act of 1938. They also more than justified the formation of Cane Pest and Disease Control Boards and enhanced their reputation.

15.4.3.2 The 1968–1990s Epidemic

From the early 1950s to 1968, Fiji was found only in Rocky Point and occasionally in Moreton. The victory had been won and vigilance slipped after many years of freedom. It came as a rude shock to Boards and BSES when an escalating outbreak was found in Bundaberg in the dominant variety NCo310 in 1968, but many much bigger shocks were to come as the great southern Queensland Fiji epidemic began to explode. It's important to understand why and how this happened, because of the huge workload and funding it imposed on BSES, Boards and the local industry.

The major factors all related to NCo310 which was:

- a very productive and profitable variety for southern and central districts, grown on the great majority of the area, and with no viable alternative resistant varieties.
- rated as a moderately susceptible variety in disease trials but very susceptible in these new circumstances. Close inspections were needed to locate early disease symptoms.

- A highly favoured host for the leafhopper vector of the disease, producing enormous numbers of leafhoppers even on diseased stalks. This resulted in huge swarming flights which dispersed throughout the Bundaberg cane area and far, far beyond it.

(a) The Bundaberg Situation

The tried and true methods from the earlier epidemic were employed at Bundaberg for a few years, but could not cope with the new circumstances.

A new strategy was needed to cope with this exploding epidemic, and this was developed by a BSES Fiji Team in consultation with the Bundaberg Board and the whole Bundaberg sugar industry. The overall aim of the new campaign was to slow down the rate of spread where possible, prolong the economic life of NCo310 until resistant varieties could be substituted, and then quickly eliminate NCo310.

Bundaberg Board was split into three (Bingera-Gin Gin, Fairymead, Millaquin-Qunaba) to give greater local focus, and levy rates were increased considerably. The number of inspectors employed was increased, particularly during the December-May period, peaking at an average of 35 in 1973. The first comprehensive survey of the whole Bundaberg area was undertaken in the 1973–74 summer. An alarming 66% of farms were found to have some stools of Fiji disease, and this had increased to 83% in 1976, with at least 10 million diseased stools and the first serious yield losses (12,000 tonnes cane) in the core Fiji-diseased area.

Detailed inspections for disease by Boards were abandoned by 1976 in the rapidly expanding core area, but Boards began to monitor disease intensity on a locality basis. Only in the very lightly diseased fringe areas were Board inspections and some roguing maintained for a few more years, since these areas were still needed as reasonably healthy plant sources.

An annual Fiji Monitoring Scheme was set up, with Board personnel inspecting approx. 10% of assignments in 32 defined localities covering the whole district. The Scheme provided invaluable data on disease spread, intensity and yield losses. This gave a sound basis for control recommendations and the prediction of future disease intensity and spread, not only in Bundaberg but also for the other southern and central mill areas as the epidemic inexorably spread to and through them.

Boards were deeply involved in the provision of “clean plants” to the rapidly increasing number of farms unable to use their own planting material. An Approved Plant Sources Scheme was commenced in 1972 in each of the three Board areas, in association with mills and Canegrower groups. Briefly, Mother Plots were established in isolated areas to produce a nucleus of plants free of Fiji and RSD. These were bulked up in Secondary Increase Plots (SIPs) at or beyond the fringes of the cane area.

These SIPs supplied 35,000 to 40,000 tonnes annually at their peak in 1976–1979 from up to 12 separate plots. The Scheme remained in use into the 1980s although the format and size decreased as disease levels plummeted after NCo310 was eliminated. The so-called “kilogram scheme” was first promoted in 1979 for the very highly resistant but less productive Q108, Q109, Q110 and Q111, with every grower receiving sufficient kg of each variety from an isolated plot to supply planting requirements in the following year. The scheme was extended to the resistant Q87 and CP44-101 in 1981 as infection pressures eased. Board inspections were required on all these plant source plots before planting.

The scheme prevented an even faster and more financially devastating escalation of Fiji disease over a much wider area in the period to 1977. It also played a major role in quickly propagating and supplying very large tonnages of the new resistant varieties Q87 and CP44-101 from 1977.

Only the major Board tasks were noted above. The epidemic produced very heavy workloads and greatly increased costs for the three Bundaberg Boards, BSES and the whole Bundaberg industry from 1970 to the mid-1980s, as well as heavy economic losses from diminished or failed crop yields.

Fiji disease was under complete control by 1991, and has not been seen in the area for many years. Does this mean it’s been eradicated? Don’t bet on it yet!!

(b) The Isis-Rocky Point Situation

Fiji disease had not been seen in **Isis** or **Maryborough** areas in the 1950s and 1960s, but inspections were increased greatly from 1969. Predictions on spread from Bundaberg by leafhopper swarms were borne out in 1972 in Isis and in 1976 in the Hervey Bay area of Maryborough. Both had the experience in Bundaberg as a guide, and so avoided the worst of the yield and economic effects.

Disease spread was slowed by strategic inspections, roguing and plant source restrictions, but the Boards were never expected to stop the inevitable disease build up. In **Isis**, the rapid escalation phase was under way by 1977 in the susceptibles NCo310 and Q93, the epidemic peaked in 1981, and it was under control by the mid-1980s. In **Maryborough**, the disease was spreading in most localities by 1980, the epidemic peaked in 1985, and it was under control by the late 1980s.

In **Moreton** and **Rocky Point**, Boards continued annual inspection and roguing campaigns through the 1960s and 1970s, keeping Fiji under reasonably good control until the mid-1970s, even in NCo310. By 1975 in Rocky Point and late 1970s in Moreton, Fiji was increasing in NCo310 and the emphasis changed to Clean Seed Schemes and greater restrictions on the planting and ratooning of susceptible varieties. Yield losses were minor in these areas as only resistant varieties were being planted by the mid-1980s, enabling a Kilogram scheme to be introduced for healthy planting material

(c) The Mackay-Plane Creek Situation

The predicted **Fiji disease** threat to the Central District was confirmed when the first ever diseased stools in the district were found in March 1981 in southern Plane Creek area. Inspection levels were stepped up by Plane Creek and Mackay Boards until Fiji was found in Mackay area at Racecourse in December 1982, then increased further. By 1988, 153 farms were known to have cane infected, mainly in NCo310, but the real total would have been far higher.

Both Boards were fully involved in the control campaign as part of a Fiji Consultative Committee which set policy; through the development of clean cane plots in the Nebo and Blue Mountain grazing areas to the west of Mackay, as well as within the cane area; and by extensive inspections to determine where Fiji was present. Following progressive removal of NCo310 up to 1991, associated with compulsory ploughouts, the number of infected stools dropped dramatically. The last known disease in the Central District, in Q124, was recorded in 1993.

Fiji disease loomed as a threat for Proserpine area from the mid-1980s, but fortunately it was contained in Mackay area. Nevertheless, a rapid reduction of the area of NCo310 was commenced, requiring greater Board inspections and pressure leading to phasing it out.

15.4.4 Ratoon stunting disease (RSD)

“Q28 disease” – now RSD – was first recognised as a major problem in Mackay district in the early-mid 1940s. Consequently,

Mackay Board was the first to become involved in what became the major on-going disease problem of the Australian sugar industry for the rest of the century. RSD was also responsible for the formation of the last two Boards in Queensland—Babinda in 1952 and Proserpine in 1953.

Mackay Board carried out a full survey of Q28 fields in 1948–49, using the only known symptom, poorly grown ratoons, as the criterion. Its staff also assisted BSES pathologist Dave Steindl for several years with his field research trials in a special plot.

When reddened vascular bundles at the nodes were identified as a definitive symptom, all other Boards quickly became involved. When heat treatment of cane setts was shown to be capable of killing the pathogen in the setts, the scene was set for a difficult and never ending campaign by Boards to control RSD.

Control of RSD by long hot water treatment (LHWT) was first attempted by Boards in Bundaberg and the Burdekin in 1952, using makeshift inefficient tanks. In 1953, most Boards started to treat cane, with over 2,100 tons treated. Inkerman Board was the most advanced, and considerable areas were planted as a result of their 1952–53 campaigns.

Boards pushed ahead vigorously with their campaigns to combat RSD under BSES guidance, but many problems arose for them. The degree of precision required for RSD control in large tanks was not appreciated adequately – many germination problems arose when temperatures were just a little too high, while a slightly lower temperature did not eliminate the pathogen in all setts. Volunteer diseased stools and poor hygiene practices with knives and machines added to the problem of tank escapes.

HWT tanks were upgraded several times over many years to give the necessary better water circulation and temperature control. Changes included use of long stem thermometers and high quality thermostatic controllers; improved steam or electric heating methods; replacement of hessian bags by wire baskets for setts, then the shift to whole stalks in cradles; while the quality of the tank infrastructure and surrounds were greatly improved.

Grower education campaigns occupied a lot of time for Boards and BSES, right through to 2002. Poor germinations remained a problem for many years until Boards and growers learnt how to select the best quality plant sources for treatment, and how to get the best possible

germination after treatment. Hygiene with all cutting implements, including planters and harvesters, was a major problem, as was the erroneous attitude that “boiled cane” would continue to produce clean planting material for many years.

Inspection of plant sources for freedom from RSD became a major program for all Boards. When red vascular bundles were the only indicator of RSD, it became a somewhat hit-or-miss affair under some weather conditions, in immature cane and in some varieties. The result was much better than no inspections, but a proportion of wrong diagnoses did not engender a high degree of confidence in inspections by canegrowers. The introduction by BSES of phase contrast microscopy in the 1980s to check for pathogen presence was a great advance. Most Boards bought microscopes, staff were trained to use them, and there was more confidence in results. The work load was still quite heavy, however. The next great advance, using ELISA-based laboratory tests, was developed by BSES in the early 1990s. It has been used successfully ever since, with a quite low error rate.

Initially, most cane was treated for individual growers but it soon became evident that re-infection would be a major problem. Some Boards quickly moved to set up clean seed plots. Inkerman and Ayr Boards were at the forefront in producing large tonnages of RSD-free cane each year for almost all their growers. Most Boards eventually moved to a plot system which serviced some, many or all of their growers, with Boards in the Southern and Central Districts forced into large plots in order to cope with the great Fiji disease epidemic of the 1970s and 1980s.

The RSD Rollercoaster. RSD was present in all Queensland mill areas and varieties in the early 1950s, but not all fields of even the most susceptible varieties, eg Q28, were infected. By the late 1950s, a high proportion of fields originated from HWT cane stocks, due to the intense campaign by Boards. The situation looked good so complacency set in.

There was a rude awakening in 1959–60! Drought conditions were ideal for symptom expression, and many fields thought to be RSD-free were shown to be infected. Boards began another intensive HWT campaign in 1960, coupled with a greater push for plant source inspections. Fortunately, the upsurge in RSD was apparently cut short.

A second rude awakening occurred at the end of the 1960s, kicked off by the 1965–66 drought and poor hygiene on chopper harvesters as their use rapidly expanded. Boards and BSES were jolted

into action as the extent of the epidemic unfolded in the north and Burdekin in 1968–69, followed by central and southern areas. A large number of BSES/Board extension tours in the north and Burdekin in 1969–71 used the many examples of heavy yield losses from RSD. The results were a much greater demand on Boards for plant source inspections, heavier use of HWT tanks, more interest in farm hygiene, and another upgrading of tank facilities in many cases. An increase in awareness and demand also occurred in central and southern areas. It was in the mid-70s and beyond before RSD incidence was reduced to “reasonable” levels.

RSD continued to cause problems of a more local nature through the 1980s, despite continuing attention by Boards. Indeed, BSES Annual Reports for 1989 and 1991 reported that unacceptable losses were still occurring in some mill areas due to inadequate farm hygiene and failure to establish healthy nucleus plant sources on a regular basis.

15.4.5 Leaf scald disease

Leaf scald was a reasonably important disease found in all districts into the 1930s, and heavy losses occurred whenever very susceptible varieties were grown. When Disease Boards were set up in 1938, it was found mainly in North Queensland with Tully the worst affected area.

Susceptible varieties increased in all northern mill areas in the 1940s, and the epidemic peaked in 1947 with heavy losses in some mill areas. Boards spent a lot of time in inspections and identification of healthy plant sources. This work continued in the 1950s and 1960s, but the situation improved greatly as the percentage of resistant varieties soared from under 10% in the 1940s to over 90% in the 1970s.

Leaf scald had not been identified in the Central and Burdekin Districts since the Boards were formed in 1938, but became a major problem when the susceptible Q63 became an important variety in the 1960s. An inspection and roguing campaign, and restrictions on planting material, limited the problem for several years in the Central District. However, extensive death due to acute stage leaf scald appeared first in Pleystowe area in 1971, then elsewhere, and Q63 was disapproved from 1973. The Mackay Board was then involved in the orderly removal of Q63, and in protecting the less susceptible Q87 and Q96. Proserpine and Plane Creek Boards also had problems in Q63 and Q87, but of lesser magnitude.

Leaf scald was not found in Q63 in the Burdekin area until 1976, but was then quite widespread. Board staff were involved in disease inspections, monitoring the epidemic as it spread to new locations, and giving advice to growers. Quick, decisive action by BSES and Burdekin Boards controlled the epidemic with minimal yield losses in diseased blocks. A Clean Seed Scheme was introduced, with an isolated District Mother Plot producing healthy plants for the Board plots supplying growers. Compulsory Plant Source Inspections were introduced, Q63 planting was banned and accelerated ploughout of diseased blocks was introduced. The area was considered free of leaf scald by the mid-1980s. The legacy of the epidemic was an improved Clean Seed Scheme in which all participated, with lasting productivity benefits.

15.4.6 Chlorotic streak disease

Chlorotic streak is a disease of wetter and poorly drained soils, so is important in the wet tropics from Mossman to the Herbert. Yield losses can be considerable, especially in wetter years, but often were not well-recognised by many growers, while some Boards in the 1940s and 1950s did not put enough effort into controlling it. As the disease organism is endemic in such areas and in water flowing from them, Boards have been involved since the 1950s in inspecting plant sources for growers or arranging the introduction of plants from higher, drier areas, to maximise the use of healthier planting material; advising on measures to improve drainage and soil conditions; and ensuring that clean seed plots in the RSD-control program were planted in CSD-free sites. While CSD can be eliminated by a short HWT of planting material, this was not used much commercially.

The disease was also present in low-lying wet soils along creeks and rivers in Moreton and Maryborough areas, the latter only discovered in 1947. It was not known to occur in the Central District until it was identified in the 1953–54 wet season. Boards were engaged in monitoring the spread downstream and to other localities from the original site, and in checking plant sources. It was later discovered in the Burdekin area in low wet areas at the end of rows, but then higher up the rows where tail water recycling was practised. Again, Boards were involved in plant source inspections and advice on reducing the problem by better irrigation practices.

15.4.7 Mosaic disease

Mosaic was present in all mill areas at times, but fortunately the virus strain present in Australia was comparatively mild. Nevertheless, it

did cause problems for some varieties in the 1900s prior to the formation of Disease Boards, and remained one of the minor problems to be dealt with by them. Moreton Board campaigned in the 1950s and 1960s to keep it at a low level. Mosaic was also a problem for other southern Boards, particularly Isis, into the 1980s as some newer Fiji-resistant varieties were susceptible.

One serious epidemic of mosaic occurred in the susceptible Q50 when it became the major variety in the Central District in the 1950s. Strong roguing and clean seed campaigns in the late 1950s to late 1960s, particularly by Mackay Board, greatly reduced its incidence. This saved Q50 as a profitable commercial variety until it could be replaced by better and more resistant varieties in the 1970s.

15.4.8 Pachymetra root rot

Problems with poor root systems and root rotting, resulting in lodging, stool tipping and lower yields, were first noted on a farm in Babinda in the late 1960s. It was subsequently found to be widespread throughout the wet tropics of North Queensland, and became known as northern poor root syndrome or NPRS for short. It was later identified as causing problems in some parts of Central and South Queensland. The disease was characterised in susceptible varieties by extensive root rotting, very poor development of the root system resulting in stool tipping, and lower yields.

It was not until the 1980s that the disease was fully identified, control measures established, and an assay based on numbers of oospores in soil samples developed, allowing district-wide surveys to be made.

Board staff carried out surveys for NPRS, assisted with BSES research through the 1970s, and helped out with district surveys when that technique was established. They were also involved with advice to growers on control measures, particularly in the 1970s and 1980s.

15.4.9 Smut disease

When smut disease was identified in the Ord cane area in Western Australia in 1998, an inspection campaign was launched on known susceptible varieties in Queensland. Board staff were trained to detect symptoms, and some were able to visit the Ord to become more familiar with the full range of symptoms. Nothing suspicious was found up to 2002, when all Boards were privatised and this history ended. (NB: Smut was discovered in Isis area in mid-2006, and the new productivity groups had a heavy load in inspecting and identifying outbreaks throughout

Queensland, arranging clean seed plots of resistant varieties, and advising growers on control measures.)

15.4.10 Orange Rust

Orange rust was not even a minor disease in Australia for a century or more, until a new strain caused heavy infections and yield losses through Queensland in the dominant variety Q124 and other canes in 2000. Boards were involved in arranging adequate supplies of resistant varieties in clean seed plots, and advising growers of control measures.

15.4.11 Minor diseases

Pineapple disease occurred in all areas, but became more important with the use of mechanical planters. Control of the disease in germinating planting material by fungicidal dips or sprays was developed by BSES in the late 1940s. Boards in all areas were involved in big educational campaigns in the 1948 to 1952 period, and again when HWT for RSD control commenced in the 1950s. **Red rot disease** occurred in all areas in stressed over-mature cane stalks, but also caused problems in very susceptible varieties such as Co 290 and Q50 in southern and central areas in the late 1940s to early 1960s. Boards surveyed blocks and advised growers on advisability of early harvest and ploughout. Both the following diseases were systemic and treated as potentially important when they first came to notice, but were found only in quite restricted locations.

Dwarf disease was identified in parts of the southern section of Mackay area in the 1930s. It increased in the late 1940s and 1950s as cane growing expanded into new areas, but later faded away.

Mackay Board carried out regular surveys, inspected and rogued diseased fields, and selected clean plant sources for growers. It was a surprise when it was identified in 1980 in a clean seed plot grown in grazing country west of the Bundaberg/Maryborough cane areas.

It is now assumed to be a much more widespread disease of grasses in central to southern Queensland., but capable of infecting sugar cane newly planted into what were grasslands. **Striate mosaic disease** was a locally serious problem in the Burdekin on certain blocks on over 40 farms since the late 1950s, causing heavy losses in susceptible varieties.

Boards maintained surveys of affected areas and ensured clean plant sources of more resistant varieties were used. Relatively few blocks showed any disease recurrence after resistant varieties had been grown on them for long periods.

Diseases such as **common rust** (which arrived in the 1970s in Australia), and **yellow spot** are not minor in their effects on susceptible varieties, but did not require specialised inputs from Boards except for advice to growers on mitigating losses.

A large range of other minor diseases exist in Queensland which may cause problems under restricted conditions, in localised areas or in particular varieties.

Chapter 16 History of Individual Boards

Section	Board	Page
16.1	MOSSMAN	114
16.2	HAMBLEDON	119
16.3	MULGRAVE	122
16.4	BABINDA	128
16.5	GOONDI	131
16.6	MOURILYAN	133
16.7	SOUTH JOHNSTONE	136
16.8	TULLY	141
16.9	VICTORIA/HERBERT	146
16.10	MACKNADE	154
16.11	INVICTA	159
16.12	LOWER BURDEKIN/AYR	161
16.13	INKERMAN	166
16.14	PROSERPINE	170
16.15	MACKAY	175
16.16	PLANE CREEK	183
16.17	BUNDABERG	186
16.18	BINGERA	191
16.19	FAIRYMEAD	194
16.20	MILLAQUIN	198
16.21	ISIS	202
16.22	MARYBOROUGH	207
16.23	MORETON	210
16.24	ROCKY POINT	212

16.1 MOSSMAN

Information on the early days on grub control is somewhat sketchy. Northern Outpost (Kerr, 1979), the history of Mossman Mill, notes that mill shareholders paid £100 to Mossman Farmers Association in 1901 for a grub fund. The Fund may have been in existence for a few years, as the Association was reported to have paid out £500 over the 1901–02 beetle flight season, with more beetles destroyed than for the previous three years (S.J.T.C. 11:107, 147).

Little further is known on the Fund, although Kerr (1979) reported pest control activities continued through the Mill until at least 1913, probably in association with the Fund.

A **Mossman Insect Pest Destruction Fund** was in existence in 1922 and 1927, since subsidies from the Sugar Fund were paid to it in those years (see Table 10A). We could infer a direct connection with the original Fund, but no documentation has been found. The **Cassowary Rat Pest Destruction Fund** and the **Miallo Rat Pest Destruction Fund** were also in existence in 1922 and 1927 (see Table 10A), but nothing further is known of them. All three Funds would have been terminated in 1932.

The statutory **Mossman Cane Pests Board** was constituted in early 1932, following industry discussions in mid-late 1931, and became the 7th of these Boards in existence. The initial meeting of the newly elected Board was held on 29 April 1932, and requested a levy of 3^d per ton of cane. **Mossman Cane Disease Control Board** was constituted in October 1939, and the first meeting was held on 21 November 1939. A joint meeting of the two Boards agreed to appoint a Secretary-Supervisor to carry out the necessary work. **Mossman Cane Pest and Disease Control Board** replaced the above Boards on 1 April 1942.

It operated up to July 1991 when it was renamed the **Mossman Cane Protection and Productivity Board** when Boards were given additional powers under the Sugar Industry Act to work and advise on all cane productivity matters.

However, in December 1999, all CPPBs were advised by Government that the number of statutory Boards would be reduced in due course, which happened in 2003 with amendments to the Sugar Industry Act. Any Board willing to relinquish its status voluntarily would be assisted to do so. Mossman took up the challenge immediately, and after

consultation between the mill and Canegrowers, a compliant constitution was adopted and a new company limited by guarantee, **Mossman Agricultural Services Ltd (MAS)**, was registered on 26 September 2000. **Mossman CPPB ceased to exist from 31 October 2000.**

Work of the Boards

The grub fund initially bought beetles at one shilling per pint, starting in 1901 and possibly earlier. Beetle collecting was encouraged and done regularly up to 1906. Kerr (1979) provided information on the early history. The mill seems to have had a major input into pest control in those years, with the fund as an adjunct.

Thus a mill shareholders' meeting in 1902 noted to send mill employees onto grub infested lands with orders to destroy the cane and grubs. Injection with carbon bisulphide for grub control started in 1906 on the recommendation of the Victorian Government Entomologist, and beetle payment was suspended. Mill shareholders in 1907 decided that free rat poison would be provided, while gangs of men later were employed to lay baits systematically, at least up to 1913. Payment for pig scalps commenced in 1908.

Grubs and rats are known to have been bad in those years (Department of Agriculture Annual Report 1909–10, 1910–11). There is no information on what work was carried out up to 1932 by the Mossman Insect Pest Destruction Fund or the Cassowary and Miallo Rat Pest Destruction Funds.

Mossman Cane Pests Board took over the bounty system on pigs and wallabies, which had previously been paid by Mossman Mill, as well as grub and rat control work. No field officer was employed, so only limited work could be carried out. When Mossman Disease Control Board was formed in 1939, appointment of a joint Supervisor by the Boards allowed much more field work to be done in the control of insect and animal pests, and gumming and downy mildew diseases.

Greyback grubs remained the major pest in 1942 when Mossman Cane Pest and Disease Control Board officially took over pest control operations. Fumigation continued to be done by some growers but losses continued to occur. The introduction of BHC treatment in the late 1940s gave immediate relief, but a lot of time was spent with growers to ensure correct BHC application. When the use of organochlorines was banned in the 1980s, staff were involved in advice to growers on use of Suscon controlled release insecticide and sorting out

problems with it. Assistance was given in BSES investigations into testing and approval of several new insecticides, and in grower education. **Frenchi grubs** were of less importance but still caused losses at times, eg in older ratoons by which time BHC had degraded below effective levels.

Rats were major problems in many years, and coordinated campaigns were arranged by the Board, initially using zinc phosphide, strychnine or phosphorus/bread baits prepared by staff. Thallium sulphate packeted baits later became the standard method. When aerial distribution was introduced in the mid-1960s, it soon became the standard method and the Board organised annual campaigns.

Other rodenticides replaced thallium, it became necessary to negotiate permits for baiting as rats are native animals, and this meant more work for staff as it required monitoring of populations. Minor pests which required staff involvement at times included **feral pigs** (scalp payment, subsidy on traps, etc)

Gumming disease was discovered in 1945 in HQ426, and soon spread to all districts. An intense control campaign of inspecting all susceptible varieties, quarantines, identifying diseased blocks for ploughout orders and use of healthy plant sources was very effective. In 1950, the last known infected block in Queensland was ploughed out.

Downy mildew began to spread widely in the new POJ varieties, but inspections, roguing, ploughouts and healthy planting material resulted in eradication in Mossman in the late 1940s. **Leaf scald** was a reasonably important disease in the 1930s, and the Board was able to devote more time to its control from 1950 through use of healthy plants. In the 1960s, it began to increase in the susceptible Q66, but was soon controlled. **Chlorotic streak** was and still is endemic in the wetter and poorly drained areas.

RSD control was the major disease problem for Board staff from the 1950s. The first HWT tank was installed in 1953 and was upgraded or replaced a few times to result in a well-designed tank with good automatic temperature and other equipment. Grower education campaigns were run at intervals on control methods, good hygiene practices, and use of treated, inspected or approved plant sources. Inspection of plant sources and testing for pathogen presence became a major annual job. Accuracy of diagnosis was improved by purchasing of a phase contrast microscope, and later by sending samples to the BSES

ELISA laboratory. Use of larger clean seed plots to supply nucleus amounts of disease-free plants, rather than treating for many individual growers, was a big help. Setbacks occurred in the campaign from time-to-time in the late 1950s to the late 1980s, when growers became complacent and droughts emphasised losses in infected fields. Overall, however, losses due to RSD have been kept at low levels.

Minor diseases requiring staff input at times include **mosaic**, **pineapple disease**, **red rot**, **yellow spot** and **common rust** (when it first arrived in Australia). **Pachymetra root rot** was present but surveys showed spore levels were generally not as high as in mill areas to the south.

Board staff, the BSES officer & the mill's Productivity officer were co-located in the Canegrowers Advisory Centre at the mill site in 1981, a move which was good for staff and the growers. A further change occurred in 1988 when BSES decided that it was no longer feasible to keep a full time officer at Mossman, and offered to subsidise the Board if it undertook to deliver certain BSES services. This was a very significant change—for the first time ever, BSES services were to be delivered mainly through a Board and not a BSES officer. Fortunately, the current BSES officer wanted to remain in Mossman and accepted the position of Technical Field Officer which included the supervisor duties.

Productivity issues for Mossman CPPB in the 1988–2000 period.

- A new 'Canegrowers Advisory Centre' was built on the same site, and expanded to also include cane inspecting staff, farm chemical supplies and secretarial services.
- Productivity had plateaued or declined, and this needed to be reversed.
- Inefficiencies in N fertiliser utilisation by the crop needed correcting.
- Improving drainage in wetter soil areas.
- Reducing dirt levels in the cane supply.
- Obtaining more productive varieties for Mossman area.
- A joint CSIRO/BSES/MAS project on silicon deficiency.

Board staff and members

Arthur Taylor was appointed as the first Supervisor in December 1939, moving from his previous position at Tully. He resigned

in early 1948, but had established the role of a Supervisor in the area. **Neville (Nev) Crees** was appointed in 1958 and remained for 29 years until his retirement in 1987. He came to the job acknowledging that he had much to learn, but took every opportunity to master it. He became one of the small group of top Supervisors in Queensland, always participated actively at Pest Board Conferences, and ran a tight ship in Mossman on pest and disease control in the field. **Allan Rudd** was appointed Technical Field Officer (not Supervisor) in early 1988, after being BSES Extension Officer in Mossman for many years. His appointment was significant in that, for the first time, BSES services were to be delivered mainly through the Board and not by a BSES officer.

Board members of note who contributed greatly to the Boards' development, and who also made significant contributions at Pest Board Conferences, included **Ernie Berzinski** (member for 33 years to 1971), **Barry Murday** (member for 29 years to 1989), **Brian Berzinski** (member for 19 years to 1990) and **Ron Verri** (member for 21 years to 2000).

POSTSCRIPT

THE 2000–14 PERIOD FOR MAS AS A NON-STATUTORY BODY *(provided by Allan Rudd, Extension Agronomist)*

The previous Mossman CPPB quickly took up the challenge to privatise when permitted to do so in 2000. Mossman Agricultural Services Ltd (MAS) was registered as a company limited by guarantee on 26 September 2000, and took over from MCPPB which was dissolved on 31 October 2000. MAS was then used by government as an example for other Boards of how to proceed when privatisation became mandatory, and its constitution was used as a template by several other boards.

Major issues during this period were:

- Allan Rudd was the initial CEO of the company. He was replaced in 2006 as CEO by Daryl Parker, who was originally employed to lead an SRDC project on Best Management Practice. Allan remains as the company's financial co-ordinator and as an Extension Agronomist with the productivity service. Alec Ford, ex BSES and long time productivity officer since 1988, retired in 2013.

- As BSES services were taken over in 1988 by Mossman CPPB, MAS was not affected when the BSES Extension Advisory Service was discontinued in 2012.
- MAS concentrated on priority productivity issues including: RSD, drainage, crop nutrition, cane varieties, harvesting issues, adoption of Best Management Practice, development of new production areas.
- MAS extended into the area of harvest management on behalf of Mossman Mill, and employed the last remaining Cane Inspector at the mill. As a result, staff were heavily involved in developing GIS and GPS for the area.
- Smut disease was discovered in south Queensland in 2006, and this triggered inspections throughout the state. When it was located in Mossman, considerable effort went into determining its extent and effect on susceptible varieties, then undertaking a control program to replace them as soon as possible.
- In 2007, MAS purchased a local rural merchandise store and joined the CRT buying group. This shored up the provision of competitively priced fertilisers and agricultural chemicals to growers.

16.2 HAMBLEDON

Little is known of the earliest days of pest control in the Cairns area. The Queensland Department of Agriculture (Ann. Rep. 1909–10) noted that Cairns had bought beetles since 1898, but the name of the fund was not given. Funds apparently operated on a mill area basis and presumably came from voluntary subscriptions subsidised by CSR for its Hambleton suppliers. **Cairns District Canegrowers Pest Destruction Fund** was established in 1909, when Hambleton and Mulgrave combined their efforts following heavy losses from greyback grubs in the 1907–1911 period, with 25–30,000 tons cane lost annually in Cairns district, and more in bad years (A.S.J. 3:199, 1911). However, the first

known record of the name is from the Fund's annual meeting in December 1915 (A.S.J. 7:736, 1916). The Fund operated up to 1931, when Mulgrave withdrew to form its own Board. A sub-set of the Fund remained for Hambleton growers until 1934, and was known as the **Hambleton Cane Pest Fund**. Strangely, the Cairns Fund still existed as an entity in October 1941, when it invested £140 in Commonwealth Government War Bonds.

The voluntary **Hambleton Cane Pest Board** was set up in September 1934 at a general meeting of subscribers to the Fund and intending subscribers.

This followed from a resolution at a general meeting of Hambleton growers in April 1934. A statutory Board was not sought since CSR did not favour that approach. CSR offered all the support and assistance which was being given in Goondi, including a 1:2 subsidy on grower contributions and provision of a Field Officer to advise growers on grub and rat destruction, and control of other pests.

The name was amended to **Hambleton Cane Pest and Diseases Board**, possibly at the time that the statutory Board was set up in 1939. However it remained voluntary until 1960 when it was voted out of existence, as CSR staff had become fed up with attending separate meetings of the voluntary and statutory Boards, and discussing and voting on the same things.

The statutory **Hambleton Cane Disease Control Board** was established on 7 October 1939 and held its first meeting on 20 November 1939. This was set up as BSES was not happy with the control measures on gumming disease that the voluntary Board and CSR had applied.

The levy was always nominal, just enough to cover administrative and other such costs, as most decisions were made initially by the voluntary Board which paid for most of the work. It was renamed the **Hambleton Cane Pest and Disease Control Board** on 1 April 1942. The pattern outlined above continued until 1960 when the voluntary board was voted out of existence. BSES was able to push its policy to some extent through this Board, and relations with the Field Officers were generally satisfactory. It became the **Hambleton Cane Protection and Productivity Board** when Boards were given additional powers to work on cane productivity matters in July 1991. However, **Hambleton Board was dissolved on 31 December 1991** by the Minister for Primary Industries, following closure of Hambleton Mill by the millowner CSR Ltd.

Work of the Board

Greyback grubs were a very major problem from the 1890s in many parts of Hambledon, especially in the Greenhill Estate area. CSR Annual Reports regularly provided information on yield losses, eg heavy annual losses of 25–30,000 tons cane lost due to grubs in the 1907–1911 period. The various Funds/Boards bought beetles until the 1940s, but fumigation by carbon bisulphide was promoted strongly in the 1930s and early 1940s. However, serious losses continued to occur until the introduction of BHC treatment in the late 1940s. A lot of time was spent with growers to ensure correct BHC application. When the use of organochlorines was banned in the 1980s, staff were involved in advice to growers on use of suSCon Blue controlled release insecticide and sorting out problems with it. Grub damage increased considerably into the 1990s as suSCon failed, until new insecticides could be developed. **Frenchi grubs** could also cause losses at times.

Rats caused losses from the early years, and baiting campaigns were arranged by the Board. The introduction of commercially packeted thallium sulphate baits made it easier. When aerial baiting was developed, the Board organised annual campaigns as required. Other rodenticides replaced thallium, and it became necessary to negotiate permits to kill rats since all native animals, including rats, became protected. Other minor pests needed attention at times, including **pigs** and **cicadas**.

A serious **gumming disease** outbreak in SJ4 in the late 1930s was the reason that the statutory Disease Control Board was set up in 1939. Inspections to identify diseased blocks, ploughouts, policing BSES quarantines, clean seed schemes and removal of SJ4 brought it under control. **Downy mildew** was also a problem but an outbreak was avoided by Board diligence. **Leaf scald** was of rising concern in the 1930s but became of greater concern as more susceptible varieties were grown. It was reduced to low levels as inspections identified infected blocks for ploughout, healthy plant sources were used, and the percentage of resistant varieties increased greatly. **Chlorotic streak** was a problem in wet and poorly drained localities, but use of disease-free plants helped to control it. **Pachymetra root rot** was much less of a problem for Hambledon in the 1970s and 1980s than for others in the wetter tropics. Once the popular but highly susceptible Q90 was replaced, the situation improved but staff still spent a lot of time on giving advice to growers. Other diseases requiring attention at times were **mosaic**, **red rot**, **yellow spot**, **common rust**, **pineapple disease**, and **eye spot** in Q101.

Board staff and members

CSR Technical Field Officers ran the field operations of Boards from 1939 to 1978, mostly for short terms except for **Dave Quinan** who was TFO/Supervisor from 1967 to 1978 and ran an efficient operation. **Richie Falla** was the first and only non-CSR supervisor from 1978 to 1991, following a period as assistant, and was also an efficient operator. He became Assistant Supervisor at Mulgrave CPDC Board when Hambleton area was taken over by Mulgrave Mill.

Most chairmen were CSR mill managers and short term, until grower member **Frank Cattana** was chairman from 1973 to 1987, and put a lot of effort into the job. **Bill Brown** was a grower rep on the voluntary Pest Board from formation in 1934, was elected on the statutory Cane Diseases Board in 1939, and continued on in the Pest and Disease Control Board to late 1980s. “Brown, Hambleton” was a regular attendee at Pest Board Conferences and participated in the discussions.

16.3 MULGRAVE

Little is known of the earliest days of pest control in the Cairns area. The Queensland Department of Agriculture (Ann Rep 1909–10) noted that Cairns had bought beetles since 1898, but the name of the fund was not given. **Mulgrave Mill** bought beetles and grubs from 1898 to 1908, with grub damage becoming severe from 1907. **Cairns District Canegrowers Pest Destruction Fund** was established in 1909, when Hambleton and Mulgrave combined their efforts following heavy losses from greyback grubs in the 1907–1911 period, with 25–30,000 tons cane lost annually in Cairns district, and more in bad years (A.S.J. 3:199, 1911). However, the first known record of the name is from the Fund’s annual meeting in December 1915 (A.S.J. 7:736, 1916). The Fund operated up to 1931, when Mulgrave withdrew to form its own Board.

Mulgrave Pest Destruction Fund was set up at the annual meeting of the Mill in May 1931, and a levy of 1^d per ton crushed was agreed. This voluntary Fund remained in operation until April 1942. The statutory **Mulgrave Cane Disease Control Board** was constituted on

17 April 1939, mainly to undertake control measures against gumming disease. **Mulgrave Cane Pest and Disease Control Board** replaced the Disease Board on 1 April 1942, and officially took over pest control operations also. It operated until July 1991.

In July 1991, it was renamed the **Mulgrave Cane Protection and Productivity Board** when Boards were given additional powers to work and advise on all cane productivity matters, as well as retaining their existing powers on pest and disease control.

In 1992, CSR closed Hambledon mill, its growers became Mulgrave mill suppliers, and Hambledon CPPB operations were absorbed by the Mulgrave Board.

Much greater change occurred from 2003 when sections of the Sugar Industry Act were amended—statutory CPP Boards and their statutory levies were abolished. Mulgrave Board was dissolved on 30 September 2003 and was replaced by the voluntary **Mulgrave Productivity Committee**, with services provided through Mulgrave Mill.

Work of the Board

Mulgrave Mill and the Cairns Fund bought beetles and grubs from 1898 to 1931 as the main ‘control’ measure for greyback grubs. There was also some promotion on fumigation by carbon bisulphide for grubs. From 1931 to 1942, the Pest Destruction Fund continued to buy beetles but also strongly promoted carbon bisulphide/paradichlor fumigation—an initial 20 tons were bought and resold to growers at a subsidised price. Rat baiting was promoted and help given in the laying of baits, while subsidies were paid on pig and wallaby scalps.

Greyback grubs remained the major pest in 1942 when Mulgrave Cane Pest and Disease Control Board officially took over pest control operations, nominally operated through the mill since 1939. Fumigation continued to be done by growers, but the Board also employed 3-man gangs to fumigate fields on behalf of growers.

Beetles continued to be purchased despite evidence of its ineffectiveness, but that was discontinued after a few years. Thousands of acres were affected in most years of the 1940s, but help was at hand from BHC treatment, the first major applications being made in 1948. Bulk orders of BHC were arranged by the Board for several years to ensure adequate supplies were available for growers. A lot of time was spent with growers to ensure correct BHC application.

When the use of organochlorines was banned in the 1980s, staff were involved in advice to growers on use of suSCon Blue controlled release insecticide and sorting out problems with it. Grub damage increased considerably into the 1990s as suSCon failed as a consequence of high pH levels in the soil, either naturally or from addition of lime or mill mud applications. Assistance was given in BSES investigations into testing and approval of alternative insecticides. Subsequently, Confidor was developed as an effective replacement. **Frenchi grubs** were of less importance but still caused considerable losses at times, eg in older ratoons by which time BHC had degraded below effective levels.

Rats were major problems in many years, and coordinated campaigns were arranged by the Board, initially using zinc phosphide or phosphorus/bread baits prepared by staff. Thallium sulphate packeted baits later became the standard method. When aerial distribution was introduced, the Board organised annual campaigns. Other rodenticides replaced thallium, it became necessary to negotiate permits as rats are native animals, and this meant more work for staff as it required monitoring of populations. Other minor pests which needed attention from time to time included **pigs, wallabies, wireworms** and **weevil borers**.

When the Disease Control Board was set up in 1939, work began in earnest to control the two major disease problems, and it was increased further after the CPDC Board was formed in 1942. The supervisor's aim was to visit each farm at least once per year for block inspections, with known infected and suspect farms inspected at least every few months.

The **gumming disease** outbreak in SJ4 was threatening to get out of control. Inspections to identify diseased blocks, ploughouts, policing BSES quarantines and clean seed schemes brought it under control by 1945, and then eradicated it.

Downy mildew was also an increasing problem, but good work by the Board greatly reduced it and then eradicated it. **Leaf scald** was present through much of Mulgrave in the 1930s, but the worst affected area was from Aloomba south, sometimes causing considerable losses.

With gumming and downy mildew under control, greater effort was put into leaf scald control as several new but susceptible varieties, including the popular Q66, were planted. Inspections to identify infected blocks, ploughouts, plant source inspections, and a much higher percentage of resistant varieties helped to reduce leaf scald to very low

levels. Plantings of the susceptible Q66 in the 1960s became infected, but it was quickly brought under control while the outbreak was still minor.

RSD control became the major on-going disease problem for Boards in the early 1950s. Mulgrave's first hot water treatment tank was installed in 1953, but temperature control and circulation were improved in a new tank.

Finally, a large, well-designed tank with good automatic temperature control was installed. The Board ran a continuing grower education campaign to combat RSD, particularly on good hygiene practices with knives and machinery, and volunteer cane removal. Inspection of plant sources for freedom from RSD became a major annual job. Accuracy of diagnosis was improved by purchasing a phase contrast microscope, then by sending samples to the BSES Elisa laboratory.

Treatments were done for individual growers for years, but the Board gradually moved to use of large clean seed plots in areas free of chlorotic streak to supply nucleus amounts of disease-free cane to growers. A few setbacks occurred in the campaign in the 1960s to 1980s as growers became complacent, until droughts emphasised losses in infected fields. But generally, board staff and growers have kept Mulgrave area relatively RSD-free.

Chlorotic streak was, and still is, endemic in the wetter and less well drained southern section of the area, causing some yield losses. Plant sources were inspected and advice given on where to site heat-treated cane plots so only disease-free cane was planted. Introduction of clean seed material from the drier northern areas was also arranged where needed.

Pachymetra root rot became a problem in the 1970s and 1980s mainly due to the widely planted but highly susceptible Q90 and related varieties. Board staff were involved in identifying affected blocks and advising growers on control campaign measures.

Minor problems which required some staff input included **mosaic disease**, **pineapple disease**, **red rot** in Co475, **yellow spot** when there was a pathogen strain change in 1970, **common rust** when it first arrived in Australia in 1976, and **eye spot** in Q101 when it was released in the 1970s.

Mulgrave Board and staff benefitted greatly by the close association with Meringa Experiment Station (aka "the Grub Station"). Entomological advice was always available in person, as was

pathological advice from mid 1950s to early 1970s. The supervisor increased his knowledge by assisting with BSES field investigations, while a BSES officer usually attended monthly Board meetings.

Productivity issues for Mulgrave CPPB in the 1991–2003 period

- When the Mulgrave/Hambledon merger occurred in early 1992, grower members of the latter were given seats on Mulgrave Board until the next round of elections, while supervisor Richie Falla transferred to Mulgrave, mainly with responsibility for the ex-Hambledon area. This helped in bringing local Hambledon issues to the Board's attention.

Board staff and members

Percy Volp, a mill staff member who was involved in pest control operations, was appointed supervisor of the new Disease Board in 1939, and continued until his retirement in 1969. He had a strong work ethic in pest and disease control; knew all his farms and growers well and kept them toeing the line; and became one of the top echelon of supervisors, attending all Pest Board Conferences. **Allan Morton** was assistant to Percy before becoming supervisor from 1970 to 1992, then senior supervisor until retirement in December 2003. He continued to run an effective operation. **Richie Falla**, previously supervisor at Hambledon, became supervisor in early 1992 when Mulgrave Mill absorbed the Hambledon area. In late 2003 when Mulgrave Board was dissolved, he became Senior Field Officer at Mulgrave Mill when Mulgrave Productivity Committee was formed.

The first Board chairman was **Billy Griffin** from 1939 to 1956. **Jack Warner** was a grower rep for 42 years from 1942 to 1984, and chairman for the 28 years 1956–84, both record terms. He and Nelson Whittaker ran a tight ship for many years, and Mulgrave was an excellent example of what a CPDC Board should and could do. Don Leighton (1984–1995) and **Tom Watters** (1995–2002) followed on in the same tradition. **Nelson Whittaker** was Mill Manager and a miller rep for 20 years from 1951 to 1971.

He was an advocate of cooperation with BSES on strong pest and disease control measures, and kept a close eye on Board operations. **Gordon Cotterill** was a grower rep for 31 years from 1960 to 1991, and attended many Pest Board Conferences—"Cotterill, Mulgrave" had a loud voice and plenty of (mostly) relevant things to say.

POSTSCRIPT
THE 2003–14 PERIOD FOR MPC AS A
NON-STATUTORY BODY
(provided by Richie Falla, Senior Field Officer)

When the Board was to be abolished by amendment of sections of the Sugar Industry Act, Mulgrave Mill and Cairns Canegrowers were consulted on the future of the Board. It was agreed that a voluntary body known as the Mulgrave Productivity Committee would be set up to oversee operations, which would be provided through Mulgrave Mill.

Major matters dealt with included:

- Mulgrave Productivity Committee formed in late 2003, consisting of four grower, three millowner and one BSES representatives, and chaired by the Manager of Field and Productivity Services at Mulgrave Mill. It operates in an advisory capacity only to ensure that all cane pest, disease and productivity work is carried out in accordance with the agreement between Cairns Canegrowers and the millowner MSF Sugar.
- Richie Falla became the Senior Field Officer at Mulgrave Mill in 2003. David Wallis (ex BSES) was appointed Productivity Officer from 2005 until his resignation in 2011, replaced then by Matt Hessian.
- In 2013, following the withdrawal of Extension Services by SRA, Michael Porta (ex BSES) was employed by MSF Sugar and Cairns Canegrowers as Senior Extension Officer to cover the Mulgrave and South Johnstone mill areas.
- Smut disease was discovered in south Queensland in 2006, and this triggered major inspections throughout the state. Considerable effort went into locating it in Mulgrave area, determining its extent and effect on susceptible varieties, and undertaking a control program to replace them as quickly as possible.
- Other issues include the recent occurrence of Yellow Canopy Syndrome and a leaf scald outbreak in variety Q229.

16.4 BABINDA

Nothing is known of the very early days but a mill fund probably existed and bought beetles. We know that Babinda was invited to join the Cairns District Canegrowers Pest Destruction Fund in 1916, but the offer was declined. The **Babinda Mill Pest Fund** was set up sometime before 1920—maybe even in the early 1900s—and was still in existence in the 1935 to 1952 period as its representatives attended the Annual Pest Board Conferences. It did assume some responsibility for coordinating control measures for other pests and diseases, but arrangements were loose and quite unsatisfactory.

By 1952, Babinda mill area was the only one which had neither a statutory nor voluntary Board, and the BSES Board recommended “that the area be declared cane pest and disease infested and a statutory Board be constituted because of the complete lack of control measures in that mill area.” Within a month, the **Babinda Cane Pest and Disease Control Board** was set up on 20 December 1952, with the first members elected in March 1953. It remained in operation to July 1991, when boards were given additional powers to work and advise on productivity matters under the Sugar Industry Act 1991, and was renamed the **Babinda Cane Protection and Productivity Board (BCPPB)**.

Profound changes occurred for Boards in 2003 when sections of the Sugar Industry Act were amended and statutory Boards were abolished. However, Boards were informed late in 1999 of the coming changes, and were allowed to opt out prior to 2003 if they wished to do so. Babinda, Mourilyan and South Johnstone Boards, in conjunction with the millowners and the three Canegrower groups, agreed to amalgamate in a single organisation. **Babinda CPPB was abolished in September 2002** and a public company limited by guarantee—**Innisfail Babinda Cane Productivity Services Ltd (IBCPS)**—was set up and took over all assets of the former Boards.

NB: Further information on IBCPS in the 2002–2014 period is provided in the POSTSCRIPT at the end of section 16.7 South Johnstone.

Work of the Board

Little is known of the operations of the Pest Fund except that it bought beetles into the 1940s. In the late 1940s, its only operations were the bulk purchase of BHC for resale to growers at a subsidised price, and

the distribution of rat baits. Diseases such as chlorotic streak and leaf scald were widespread in the area in the 1930s and 1940s, and BSES discovered in the early 1950s that RSD was widespread also and causing losses. The new Board faced a formidable task in 1953 to set itself up, win the confidence of growers, and start work on their many problems. Information on work in the 1950s and 1960s is very sketchy as most Board records were lost in the 1970s when its office was moved from the old mill site.

RSD control was the major focus initially, and continued to take a considerable amount of work through into the 2000s. The first HWT tank in the mill yard was inadequate, and was replaced by a new larger tank with better temperature control. Later, a modern well-designed tank with automatic temperature control was installed on a new site. For many years, cane was treated only for individual growers, but the Board then moved towards large clean seed plots in areas free of chlorotic streak—a particular problem in the wet Babinda area.

During the 1970s and 1980s, the Board operated a large clean seed plot on spare land in the mill yard, with plant and 1R blocks, and all cane cut by hand by the growers. This land was resumed by the mill for bagasse storage in the late 1980s, so suitable land had to be leased elsewhere. RSD control has always been a high priority, and it adopted a policy of doing 100% plant source inspections in the 1970s which resulted in very low levels of disease in commercial cane fields.

Leaf scald was present on many farms in Babinda in 1953. Board inspectors identified infected blocks in susceptible varieties which had to be ploughed out, while plant source inspections and removal of susceptible varieties reduced it to much lower levels. Planting of the popular but susceptible Q66 in the 1960s started another surge but quick action by the Board brought it under control.

Chlorotic streak disease was endemic on a majority of Babinda farms in the 1930s and 1940s, particularly in the wetter and poorly drained areas. It was not well-recognised by growers and so infected plant sources were often used, causing additional yield losses. Advice was given to growers on the need for better drainage, where to site HWT cane plots to avoid the disease, the need for plant source inspections, and use of more resistant varieties on wetter land.

Pachymetra root rot was seen for the first time ever in the late 1960s, in a block of Q90 in Babinda area, and tentatively identified by BSES as a new fungal root rot. It became a serious disease in all northern

areas in the 1970s in the extremely popular, but highly susceptible, Q90 and related varieties, causing heavy yield losses in all mill areas. Babinda and other northern Boards jointly pressured BSES to devote more resources to solving this problem.

Staff were deeply involved in monitoring the developing problem, assisting BSES in research, advising growers on use of lower yielding but less susceptible varieties as an interim measure, then building up stocks of new resistant varieties as they became available.

Greyback grubs had been a major pest causing serious losses in Babinda up to the end of the 1940s. When the Board began operations in 1953, BHC was widely used and losses in treated blocks were negligible. Staff spent time with growers to ensure correct application methods were always used.

When organochlorine insecticides were banned in the 1980s, growers were advised on how to use suSCon Blue controlled release insecticide. They were also involved in the 1990s as suSCon began to fail and other insecticides had to be used.

Rats were a major problem in Babinda area in the 1930s and 1940s, and the Fund distributed rat baits to growers up to 1952. This was continued by the Board.

Thallium sulphate packeted baits soon became the standard, and were purchased in bulk lots. When aerial baiting was introduced, the Board organised annual district-wide campaigns in the 1970s and 1980s. As other rodenticides replaced thallium and permits to kill native animals were introduced, more work was required by staff in monitoring rat populations to justify baiting.

Other pests became of some significance at times. These included **feral pigs**, a few insect pests and a few noxious weeds. **Giant sensitive plant** was spreading in the area, including into cane fields, and required constant vigilance of known infested sites to prevent seeding. Pressure also had to be applied at DPI weeds advisory meetings, and later at Council meetings, to prevent spread by unauthorised movement of infested sand or soil.

The Board sold agricultural chemicals (BHC, rat baits) at good prices from its inception, and expanded into other insecticides and weedicides as the need arose. This helped to keep the levy at a lower level and was appreciated by growers.

Productivity issues for Babinda CPPB in the 1991–2002 period included:

- Low ccs, low tonnes cane/ha and varieties more suited to wet conditions have been major issues for many years.
- A Productivity Officer was appointed in 1995 to increase work on these.

Board staff and members

Early supervisors included **Paul Valmadre** and **Frank Ballerini**. **Glen Crossland** became supervisor in 1970 and retired in 1995. **Bill Brand** joined as an assistant in 1973. On Glen's retirement in 1995, Bill was appointed as Cane Protection Officer and continued on as an IBCPS staff officer throughout the 2003–14 period. **Mike Goodson** was appointed Productivity Officer in 1995, and continued on with IBCPS until 2005.

Howard Kennedy was a miller rep on the Board from 1952 to 1972, then a grower rep from 1972 into the 1980s. He was chairman for most of that time, took a keen interest in all Board activities and control measures, and was the major factor in getting Babinda growers to accept the new Board and the need for control measures.

16.5 GOONDI

The first organised efforts to control canegrubs began in September 1895, when a Goondi Estate growers' meeting voted to set up a Committee and levy 6^d per acre to pay for beetles. Millowner CSR offered to subsidise this at 1/- per acre on growers' lands (2,800 acres) and to pay that on its own 1,000 acres of cane. Most growers signed up. This was probably the start of the **Goondi Beetle and Grub Fund**, with levy and subsidy continued annually, not necessarily at the same rate.

The **Johnstone River Grub Destruction Fund** was set up in 1896 to handle all grub control in the district when government provided a subsidy for a few years. A prerequisite was establishment of a district-wide committee responsible for handling all funds. Control returned to

Goondi growers and CSR within a few years. The **Goondi Beetle and Grub Fund** was probably the name used from these early days, and is known to have been in common use before 1916. From 1910, funds raised at Goondi were subsidised by the Sugar Fund (levies raised under the SES Act).

The Fund was renamed the **Goondi Cane Pest Destruction Fund**, probably in 1922, when legislation to enact statutory Cane Pests Boards was being prepared. Goondi continued to operate as a voluntary Fund, actively encouraged for most of the time by CSR. The **Fund was wound up in July 1987** when Goondi Mill was closed, and the area was split between Babinda and Mourilyan.

Work of the Fund

Canegrub control operations by the Funds were confined initially to purchase of beetles and grubs. CSR Annual Reports provided some information on grub damage and control costs in their northern mills, with serious losses in 1907–1910 and at intervals through to the 1940s. Like all far northern Boards, Goondi was deeply involved in grub control campaigns—promoting and subsidising fumigation with carbon bisulphide/paradichlor in the 1930s, then BHC application from the late 1940s and better application techniques through the 1950s. Banning of organochlorines in the 1980s and introduction of suSCon Blue were in progress when the Fund was wound up.

Rats were major problems in many years and control work probably commenced as early as the 1910s. The Fund's first employee, designated as a "rat poisoner", was in 1925, when it is known that a rat poisoning campaign operated.

Strychnine and phosphorus baits were used until thallium sulphate became available, and the Fund organised coordinated campaigns, especially after aerial rat baiting was introduced. Other pests of some significance included **feral pigs** (from the 1950s) and **giant sensitive plant** (from 1950s to 1980s). GSP required vigilance to prevent seeding and the movement of contaminated sand and soil.

Disease problems did not occupy much of the Fund's time until the campaigns of the 1950s–1980s to control **RSD** by LHWT of cane, plant source inspections and use of clean seed plots. A lot of effort went into this, particularly on the hygiene side. **Pachymetra root rot** caused a lot of losses in the 1970s and 1980s in the highly susceptible major variety Q90 and related clones. Staff spent a lot of time on advice to

growers in control campaigns. **Leaf scald** caused minor problems from the 1930s, and bigger problems in Q66 in the 1960s, requiring field inspections and eventual removal of the variety. **Chlorotic streak** is endemic in wetter and poorly drained areas, and identification of healthy plant sources is essential. **Yellow spot** in the early 1970s was spectacular when a pathogen strain change occurred.

Throughout its known history, particularly from the 1950s, Goondi Fund showed an ability to quickly change emphasis in attacking the problems limiting cane production in the mill area. So in 1975, the Fund incorporated the role of the Goondi Productivity Committee as one of its functions. There was good cooperation between the Fund, its members, and BSES research and extension staff, particularly in its last 20 or so years. The local BSES extension officer regularly attended Management Committee meetings from the 1970s.

Fund staff and members

The CSR Field Chemist at Goondi always held the position (unpaid) of Supervisor for the Fund. A 'rat poisoner' (**William Connolly**) was the first employee in 1925, and he remained with the Fund as an assistant until 1963.

Bill Davis then became Assistant Supervisor, later becoming Supervisor in a policy change, and remained with the Fund until its termination in mid-July 1987. He was instrumental in modernising and upgrading operations, particularly now that he had to deal with productivity functions. He also introduced the first computerised system of recording pest and disease data.

16.6 MOURILYAN

The first voluntary funds in the Innisfail area were set up in 1895 to pay for beetle and canegrub collection. The Johnstone River Farmers Association sought subscriptions from cane growers and others, while Goondi/CSR ran their own fund.

In 1896, a centralised area fund, the **Johnstone River Grub Destruction Fund**, was set up in order to obtain Government subsidy. When a central fund was no longer a pre-requisite for subsidy, the

Mourilyan Cane Pest Destruction Fund was set up in 1897. It continued to operate until 1975, when there was an argument between the mill and growers on introduction of a highly subsidised price at which BHC would be resold to growers. The mill argued that mill monies should not be used to lower growers' costs of standard farming operations. It was assured by BSES that such a large subsidy would not be approved under a statutory Board, so the mill withdrew its support from the Fund and sought a statutory Board.

The **Mourilyan Cane Pest and Disease Control Board** was constituted in February 1975. It remained in operation to July 1991, when boards were given additional powers to work and advise on productivity matters under the Sugar Industry Act 1991, and was renamed the **Mourilyan Cane Protection and Productivity Board**.

Profound changes occurred for Boards in 2003 when sections of the Sugar Industry Act were amended and statutory Boards were abolished. However, Boards were informed in late 1999 of the coming changes, and were allowed to opt out prior to 2003 if they wished to do so. Mourilyan, Babinda and South Johnstone Boards, in conjunction with the mills and Canegrowers, agreed to amalgamate in a single organisation. **Mourilyan CPPB was abolished in September 2002** and a public company limited by guarantee, **Innisfail Babinda Cane Productivity Services Ltd (IBCPS)**, was set up and took over all assets of the former Boards.

NB: Further information on IBCPS in the 2002–2014 period is provided in section 16.7 South Johnstone.

Work of the Boards

Little is known of the early operations of the Pest Fund except that it bought beetles and was involved in rat control operations. Little work was done on disease control until well after statutory Cane Pest and Disease Control Boards had been set up in 1942.

Greyback grubs were the major pest from the 1890s to the 1940s, devastating large areas in the worst years. The Fund was actively involved in control measures, not only by buying beetles but by promoting soil fumigation with paradichlor in carbon bisulphide and subsidising chemicals. The arrival of BHC insecticide for grub control in the late 1940s was a godsend, and a lot of time was spent with growers to ensure correct BHC application. A subsidy on BHC price was paid initially, but when grower members of the Fund attempted to introduce a

much higher subsidy in 1975, the mill objected. This led to the statutory Cane Pest and Disease Control Board being formed. When the use of organochlorines was banned in the 1980s, staff were involved in advice to growers on use of suSCon Blue controlled release insecticide and sorting out problems with it when it began to fail at the end of the 1980s. More grower education was required as newer insecticides arrived.

Rats were a problem in many years, and rat baiting campaigns were arranged and subsidised by the Board. This became more effective when thallium sulphate packeted baits arrived. When aerial distribution was introduced in the mid-1960s, it soon became the standard method and the Fund organised annual campaigns.

Other rodenticides replaced thallium, it became necessary to negotiate permits for baiting as rats are native animals, and this meant more work for staff as it required monitoring of populations.

RSD control was the major on-going disease problem for the Board, and the first hot water treatment tank was installed in 1953. Temperature control and circulation had to be improved on a few occasions. Finally, a large, well-designed tank with good automatic temperature control was installed.

The Board ran a continuing grower education campaign to combat RSD, particularly on good hygiene practices with knives and machinery, and volunteer cane removal. Inspection of plant sources for freedom from RSD became a major annual job.

Accuracy of diagnosis was improved by sending samples to the BSES Elisa laboratory. Treatments were done for individual growers for years, but emphasis gradually moved to establishment of large clean seed plots in areas free of chlorotic streak to supply nucleus amounts of disease-free cane to growers. A few setbacks occurred in the campaign in the 1960s to 1980s as growers became complacent, until droughts emphasised losses in infected fields.

Pachymetra root rot, initially known as Northern Poor Root Syndrome, caused serious yield losses in all mill areas from Babinda to Tully in the 1970s and 1980s in the highly susceptible major variety Q90 and related clones. Staff were deeply involved in monitoring the developing problem, assisting BSES in research, advising growers on use of lower yielding but less susceptible varieties as an interim measure, then building up stocks of new resistant varieties as they became available.

Gumming disease and **downy mildew** were known to be present in the 1930s and 1940s but were never serious. **Leaf scald** caused some problems in the 1930s and 1940s, and bigger problems in the 1960s, mainly in the susceptible Q66—field inspections, ploughouts and removal of Q66 controlled it. **Chlorotic streak** is endemic and causes losses in poorly drained areas—advice to growers on better drainage and use of disease-free plants helped reduce losses. Other diseases which required considerable staff time in identification and advice on control were **yellow spot** when there was a pathogen strain change in the early 1970s, and **common rust** when it first arrived in Australia in 1976.

Board staff and members

Eric Fox was supervisor from 1935(or earlier) to 1948, attending and participating fully at Pest Board Conferences, and developed into one of the real characters. ‘Fox’s Folly’ was the name given to the clear-felling of the rainforested Basilisk Range in the hope that it would reduce greyback grub damage—it didn’t! **John Harden** was supervisor for many years up to 1975, followed by **Frank Ballerini** to mid-1982. **George Bugeja** was the assistant supervisor at South Johnstone for 8 years, then became supervisor at Mourilyan for 20 years from 1982 to 2002 when the Board was abolished. He continued on in IBCPS as Productivity Coordinator until retiring in 2005.

16.7 SOUTH JOHNSTONE

The first voluntary funds in the Innisfail area were set up in 1895 to pay for beetle and canegrub collection. The Johnstone River Farmers Association sought subscriptions from cane growers and others, while Goondi/CSR ran their own fund. In 1896, a centralised area fund, the **Johnstone River Grub Destruction Fund**, was set up in order to obtain Government subsidy. This continued into the 1900s for some growers, but the Goondi and Mourilyan Funds split from it as soon as they could.

In November 1915, representatives of three local Pest Funds (Goondi, Mourilyan, Johnstone River Cane Growers Assoc.) met to arrange cooperative action against canegrubs and other pests (The Canegrower, Oct. and Dec. 1915).

South Johnstone mill was then under construction, and its grower representatives also attended. This followed a recommendation from BSES Director Harry Easterby that a grub destruction fund should be set up for the new area as grub damage was starting. The voluntary **South Johnstone Cane Pest Board** was probably set up in 1916, and it continued to operate until 1926.

The statutory **South Johnstone Cane Pests Board** was constituted in October 1926. South Johnstone Mill Suppliers first expressed interest in forming a statutory Board in 1924, but it was not until July 1926 that a general meeting requested this. The first Board funds came from a compulsory levy of 1^d per ton on the 1927 crush. A separate Disease Control Board was never set up, so the Pests Board operated up to 1 April 1942, when it was reconstituted as the **South Johnstone Cane Pest and Disease Control Board**.

This continued to operate up to July 1991, when Boards were given additional powers to work and advise on productivity matters under the Sugar Industry Act 1991. It was renamed the **South Johnstone Cane Protection and Productivity Board**.

Profound changes occurred for Boards in 2003 when sections of the Sugar Industry Act were amended and statutory Boards were abolished. However, Boards were informed in late 1999 of the coming changes, and were allowed to opt out prior to 2003 if they wished to do so.

South Johnstone, Babinda and Mourilyan Boards, in conjunction with the millowners and Canegrowers, agreed to amalgamate in a single organisation. **South Johnstone CPPB was abolished in September 2002** and a public company limited by guarantee, **Innisfail Babinda Cane Productivity Services Ltd (IBCPS)**, took over all assets of the South Johnstone, Babinda and Mourilyan Boards.

NB: Further information on IBCPS in the 2002–2014 period is provided in the POSTSCRIPT at the end of this Section.

Work of the Board

Nothing is known of the Board's activities up to 1925 except for paying for beetle collections. Surviving Board minutes from 1925 show that there was an established system of Official Receivers who paid for and destroyed beetles and scalps (wallabies?). Rat control campaigns were well established also, with an increased number of eight 'rat poisoners' to be employed for the 1925/26 campaign.

The Board conducted a vigorous campaign in 1925 against beetles, grubs, rats and wallabies, outlaying the very large sum of £3,000.

The major pests through the 1920s–1940s were greyback grubs and rats, with beetle borers also worrying. **Greyback grubs** devastated large areas. Some farms had no harvestable cane in some years, with overall losses estimated at more than 10% of the crop in 1943. The Board was actively involved in control measures, particularly promoting soil fumigation with paradichlor in carbon bisulphide by subsidising chemicals and hiring hand injectors cheaply. The arrival of BHC insecticide for grub control in the late 1940s was a godsend. The Board made major efforts to maximise its use and effectiveness through subsidies and helping to research the best application methodology. Work on grub control continued at intervals up to the 1990s, helping to refine placement technique, changing over from the organochlorines to controlled release suSCon Blue, and problems with the latter.

Rat control campaigns were another major job, initially using barium carbonate biscuits baked in the Board's shed, also strychnine baits and phosphorus baits prepared in the shed. Results were variable. The Board's Supervisor George Wilson heard in 1930 of the thallium sulphate wheat baits used in Hawaii, and began to make them in the Board shed. They became the standard method of control in Queensland for many years, but rats continued to be a serious problem in South Johnstone. When aerial baiting was introduced, the board organised annual campaigns.

Other pests became of some significance for the Board in terms of actual or potential crop loss, subsidy payments or staff time devoted to control. These included **feral pigs** (commencing in the 1940s) and **giant sensitive plant** (from 1950 into the 1980s). GSP required constant vigilance to prevent seeding, and pressure on government, shire and anyone moving sand and soil.

Diseases were thought to be much less important than pests up to the discovery of widespread **RSD** in commercial cane in the 1950s. Like every other Board, a large and continuing effort was put into hot water treatment of cane, clean seed plots and inspection of plant sources for the next 60 years. South Johnstone stood out in two ways. It was one of the first to construct a 'state-of-the-art' electrically heated and automatically controlled HWT unit in 1963. It was also the first in Queensland to purchase its own land to operate a clean seed plot when 10.6 ha of assigned land was purchased in mid-1987.

The plot operated under strict hygiene standards, and the first clean plants were sold in 1988. A second wholly owned plot of 5.6 ha near Silkwood was purchased in 1990 to supply the southern end of the mill area. Control of RSD in the area has been good for many years.

Pachymetra root rot, initially known as Northern Poor Root Syndrome, caused a lot of losses from the end of the 1960s to the 1980s in the highly susceptible major variety Q90 and related clones. Board staff helped BSES in investigations and were well occupied with advice to growers on the continuing control campaign.

Gumming disease and **downy mildew** were present in the 1930s and 1940s but never serious and were eliminated. **Leaf scald** caused some problems in the 1930s and 1940s, and bigger problems in the 1960s, mainly in Q66—field inspections, ploughouts and removal of Q66 controlled it. **Chlorotic streak** is endemic and causes losses through wetter and poorly drained areas—advice to growers on better drainage and use of disease-free plants helped reduce losses.

Other diseases which required considerable staff time in identification and advice on control were **yellow spot** when there was a pathogen strain change in the early 1970s, **common rust** when it first arrived in Australia in 1976, and **orange rust** when it occurred in 2000.

South Johnstone Board has always covered the full range of allowable activities under the Act, but also tried to add a few extras deemed necessary for the area. These included advice on weed control before this was an approved duty, and sale of a wide range of agricultural and other chemicals and equipment. All these issues were resolved in due course. The Board considered itself to be forward thinking in what its duties should be, and in helping to achieve reasonable changes. It was proud that it had the lowest levy in the industry in the 1980s, attributable to its efficient operation and the profit from agricultural chemical sales.

Board staff and members

George Wilson was the first supervisor, appointed in November 1929. He had been a BSES pathologist, and brought scientific expertise and enthusiasm to the job. He worked and advised on a wide range of pest, disease and other problems in the area. He resigned in February 1948 after 18 years service, returning to BSES as entomologist at Meringa.

Arthur Taylor moved from Mossman Board to become supervisor in April 1948, and remained for almost 22 years until

retirement in 1970. He was one of the characters who enlivened Pest Board Conferences.

Neil Clarke, previously cadet at Babinda Board, became supervisor in July 1972 and retired after 28 years in 2000. He helped to revitalise Board activities in the 1970s, and was active in the process of turning South Johnstone into a modern efficient operation.

Kim Bodker commenced as assistant supervisor in 1982, became supervisor from 2000 to 2002 when the board was abolished, then continued in IBCPS until retiring in 2007.

Board members of note who contributed greatly to the Board's development included **Bill Wells** (mill manager and Board Chairman 1969–79), **Leo Sosso** (grower and Board Chairman 1979–91) and **Denis Stevenson** (mill manager and Deputy Chairman 1979–91).

POSTSCRIPT

THE 2002–14 PERIOD FOR IBCPS AS A NON-STATUTORY BODY

Boards were informed in late 1999 of the coming changes, and were allowed to opt out prior to 2003 if they wished to do so. South Johnstone, Mourilyan and Babinda Boards, in conjunction with the millowner and Canegrowers, agreed to amalgamate in a single organisation. A public company limited by guarantee, **Innisfail Babinda Cane Productivity Services Ltd (IBCPS)**, was set up in September 2002 and took over all assets of the former Boards when they were abolished.

- IBCPS has 2 classes of members—growers in the mill area and the millowner. The IBCPS Board of directors consisted of 6 grower representatives (2 each from the 3 mill areas) and 3 millowner representatives.
- Staff at formation consisted of the 3 previous board supervisors, George Bugeja (now Productivity Coordinator), Bill Brand and Kim Bodker, and Mike Goodson who had been Productivity officer at Babinda.
- Its primary activities now are provision of all cane productivity advice such as implementation of better farming practices, plant nutrition and soil sampling, weed control and herbicide mixes, equipment calibration, assistance with pest and disease management, and sale of

agricultural products to members. When BSES shut down its Extension Service in 2012, IBCPS took over those functions also.

- Staff managed, propagated and distributed new varieties and certified seed from 6 Clean Seed Plots throughout the original mill areas.
- Smut disease was discovered in South Queensland in June 2006, which triggered a major inspection program throughout the state. Considerable effort went into locating and determining its extent in the area, its effect on known susceptible varieties, and the control program to replace them as soon as possible.

16.8 TULLY

Tully Mill was the last to be established in Australia until the 1990s, and crushed its first cane in 1926. There was immediate interest in forming a statutory Board, and the **Tully Cane Pests Board** was constituted in October 1926. However, a Disease Control Board was never set up in Tully.

The Cane Pests Board was replaced by the **Tully Cane Pest and Disease Control Board (CPDCB)** on April 1 1942, and continued to operate until 1991. It was renamed **Tully Cane Protection and Productivity Board (CPPB)** in July 1991 after Boards were granted additional powers to work and advise on all productivity matters.

A far greater change occurred in 2003 when some sections of the Sugar Industry Act were repealed—statutory Boards were abolished and the right to raise funds by statutory levies was lost. However, Boards were advised in late 1999 of the forthcoming changes, which they could make earlier than 2003 if they wished. After consultation between the mill, Tully Canegrowers and the Board, a new company limited by guarantee, **Tully Cane Productivity Services Ltd (TCPSL)**, was formed to take over all assets of the Board.

Tully Cane Protection and Productivity Board was dissolved on 1 September 2002, and replaced by TCPSL.

Work of the Board

Greyback grubs were the major problem faced by the Board from 1926 to 1942. Beetles were purchased up to the 1940s, the use of fumigation was promoted by purchasing Blundell injectors for loan to growers, and bulk supplies of carbon bisulphide and paradichlor were bought for re-sale to growers at subsidised prices. There was a major campaign to destroy beetle feeding trees, or at least defoliate them during the beetle emergence season using flamethrowers purchased and loaned to growers. Despite these efforts, serious yield losses continued to occur. **Rats** were a lesser but still serious problem in the 1920–30s, and work was carried out with zinc phosphide, strychnine and thallium baits to try to control them, or at least reduce the damage. **Pigs** and **beetle borers** also caused losses of concern.

Tully CPDC Board continued all this work from 1942, paying subsidies of one shilling per pound for beetles, 10 shillings per pig scalp, and a bounty on rat tails. **Canegrub** control took a dramatic turn in the late 1940s with the use of BHC insecticide, and beetle purchases, ground injections and tree clearing ended overnight. The Board assisted in BSES trials, promoted BHC by buying bulk supplies for re-sale to growers, and purchased suitable BHC applicators for hiring to growers. Considerable Board staff input on grub control continued to 2002, including: problems with BHC application and placement; introduction of heptachlor; banning of all organochlorine insecticides in the mid-1980s; introduction of the new controlled release insecticide suSCon Blue, which needed a lot of work with growers on placement; and the later release of other insecticides as suSCon began to fail.

Rats have always been a major problem in Tully. Introduction of packeted thallium baits allowed the Board to run coordinated baiting campaigns. Aerial rat baiting trials started in 1964, and soon became the standard method of control, organised by the Board. Heavy rat damage occurred again in the early 2000s, and considerable time and effort was put into assisting BSES with trials of new rodenticides and control options. **Other insect/animal pests** of some significance which required board attention were **weevil borers**, **funnel ants**, **cicadas** and **pigs**.

Giant sensitive plant (GSP) was the major plant pest in the area, and the Board was successful in having it declared a noxious plant. A lot of effort went into identifying infestations on private and public lands throughout the district, having them sprayed, and preventing the movement of soil or sand contaminated by seed to reduce the rate of

spread. In 1984, the Board began selling pesticides and spray equipment to growers, and advising them on suitable products and application methods—this was very popular with growers.

Gumming disease and **downy mildew** became problems at Tully in the late 1930s and 1940s, and the Board spent a lot of time in a campaign with BSES to eradicate them. A major outbreak of **leaf scald** occurred in the very susceptible Q66 in the 1960s, spreading to other varieties also. Field inspections to detect diseased blocks, a clean seed scheme, and removal of Q66 as an approved variety controlled the situation. **Chlorotic streak** is endemic through all the wetter and poorly drained Tully areas, and causes considerable yield losses. Selecting disease-free plant sources remains a problem for growers and the Board, and also made it difficult to site clean seed plots for the RSD control program. Better drainage was also promoted.

Pachymetra root rot, initially known as Northern Poor Root Syndrome, came into prominence in the 1970s because of its effect on the highly susceptible major variety Q90. Board staff provided a lot of help to BSES on investigations, and on advice to growers in the control campaign.

RSD control measures became the major annual job for the Board after the early 1950s, with inspections to identify diseased blocks and inspection of plant sources, hot water treatment of cane for growers and Board plots, and campaigns with BSES at intervals in the 1950s to 1980s to promote greater awareness of control measures and demonstrate yield losses.

The first tank was an old ship's tank, steam heated with manual chain lift, and in the mill yard, but this was soon replaced with a better unit. Eventually, a very efficient electrically heated tank and office complex were built in 1970 at the rear of the mill. It was the most modern in the industry at that time, with 2.5 tonne capacity, automatic temperature controller and electric hoist. The whole complex was relocated in 1977 to nearby leased land. Board-operated clean seed plots on farms were useful, but sometimes experienced problems such as chlorotic streak infection and contamination with giant sensitive plant. In 1989, 12 ha were purchased at Feluga for a clean seed plot to overcome these problems.

Other problems which occupied considerable staff time over the years in identification and advice on control measures included **yellow spot**, **rust** and **orange rust**.

Productivity issues for Tully CPPB in the 1991–2002 period included:

- Board members and supervisor became members of the existing Tully Sugar Industry Productivity Committee, whose aim was to increase local productivity and profitability.
- Siam weed, a very serious weed pest, was found to be widespread in Tully in 1994—staff were heavily involved in helping government and council staff to detect and eradicate it over 9 years.

Board staff and members

Eric Fox was supervisor from 1948 to 1967 after many years as Mourilyan supervisor, taking over after quite a few short term appointees. He was one of the real characters at Pest Board Conference. **Russell Edwards** was supervisor from 1978 to 2002, after three years as assistant during which he did the BSES training course for cadet supervisors. He continued with TCPSL as Senior Productivity Officer for several years after it replaced the Board.

Peter Borgna joined the Board as a grower representative in the early 1950s, but later was a miller rep. when he joined the Board of Tully Sugar. He was Chairman of the Board from 1963 to his death in 1982, and was also Chairman of Tully Sugar for much of this period. He was an influential advocate of strong pest and disease control measures. **Sax Maingay** became a grower rep. on the Board in 1972, then Deputy Chairman, then Chairman from 1982 to 2002. He was another strong Chairman and advocate of strong control measures. **Gerry Borgna** became a miller rep. on the Board in 1999 and Chairman in 2002, then continued as Chairman of TCPSL up to the present (2014). He was responsible for guiding the new company in its early stages, then expanding into all productivity and extension work for Tully growers.

POSTSCRIPT

THE 2002–14 PERIOD FOR TCPSL AS A NON-STATUTORY BODY

(provided by Jordan Villaruz, Senior Extension Officer, TCPSL)

When the Board was to be abolished by amendment of certain sections of the Sugar Industry Act by the end of June 2004, Tully Mill

and Tully CANEGROWERS were consulted on the future of the Board. It was agreed that it should be replaced by **Tully Cane Productivity Services Ltd (TCPSL)**, a company limited by guarantee, which was formed in September 2002. It has three elected grower members and three mill representatives on the Board of directors, and was chaired from 2002 to the present (2014) by the former TCPPB chairman Gerry Borgna. It is financed by membership fees paid by grower members and a matching contribution from Tully Sugar.

Major matters for TCPSL included:

- Aims: Improve sugarcane productivity, profitability and sustainability in Tully mill area through productivity-related programs and effective management of sugarcane pests and diseases.
- In 2007, the Tully Cane Productivity office was sold to Tully Sugar Ltd, and TCPSL co-located with BSES (now SRA) by renting office space at the Tully Sugar Experiment Station, providing good communications and collaboration.
- When the BSES Extension Advisory Service was discontinued in 2012, TCPSL took over that role also.
- TCPSL currently has a staff of 3. Jordan Villaruz joined TCPSL as Productivity Officer from 2005 to 2009, when he resigned to join BSES as an Extension Officer. However, when the BSES Extension Service was terminated in 2012, he was re-employed by TCPSL as Senior Extension Officer; in 2014 he became Team Leader also. Jake McLagan joined in 2013 as a Field Officer, and Carla Atkinson joined as Trainee Extension Officer in January 2015.
- A priority project since inception has been production of an annual supply of clean seed material for growers to multiply, supplemented by a high proportion of plant source inspections for growers.
- TCPSL has a 3-year project funded by SRA to improve adoption of tissue culture plantlets by growers in Tully. It is currently being used in Clean Seed Plots to accelerate propagation of new varieties prior to distribution to growers.

- It operates Merryburn Mother Plot to bulk up possible new varieties for release in Tully, if and when approved by SRA and Northern Industry Advisory Group.
- The Annual CAPA Productivity Report is produced with help from Tully Mill and SRA.
- TCPSL has participated in several externally funded activities, and acts as local grant or delivery officers for projects such as Terrain's Reef Rescue funding (Rounds 1–8) and the WITSIP Training and Extension (T&E) and Best Management Practices (BMP) projects.
- A 2-year project from Environment and Heritage Protection (EHP) Dept was just completed on replacement herbicides for Diuron and Velpar.
- Smut disease was discovered in South Queensland in June 2006, which triggered a major inspection program throughout the state. Considerable effort went into locating and determining its extent in Tully, its effect on known susceptible varieties, and the control program to replace them as soon as possible. Of the 2014 harvest, 39% was from resistant varieties and 52% from intermediate resistant varieties.
- TCPSL now delivers a wide range of services to its members including :- grower demonstration trials; training courses; shed meetings; bus tours for farm visits and research presentations; pest, disease and weed control advice; information on varieties; agronomic and nutrition advice; as well as organising productivity awards and support for the Tully Show.

16.9 VICTORIA/HERBERT

Little information is available on voluntary funds in the Victoria mill area in the years from 1895–1930, unlike the situation in Macknade. It is almost certain that growers in some localities in Victoria mill area participated in the 1895–98 campaigns to raise funds to buy cane beetles,

and that CSR subsidised them. A central committee for the Herbert area had been set up at that time, the **Herbert River Pest Destruction Fund**, through which all monies were channelled including the new Government subsidy. Some individual Funds continued to function in Victoria area when the central fund was discontinued, and we know that **Stone River, Fairford, Gairloch and Victoria Funds** had levies on the 1909 crop (CSR Ann Rep, 1909).

Five Funds operated in the Victoria area in 1929: **Fairford Beetle Fund, Forest Home Pest Destruction Fund, Lannercost Pest Destruction Fund, Stone River Beetle Fund and Upper Stone River Beetle Fund**. Rats became an increasing problem in the 1920s, and the various Funds in the Herbert held regular meetings to coordinate poisoning campaigns in liaison with Victoria and Macknade Mill management. The Minutes of such a meeting in September 1929 listed these five Funds, and also discussed the desirability of establishing a Central Fund.

The statutory **Victoria Cane Pests Board** was constituted in February 1934. This followed a request in November 1933 by the Herbert River Canegrowers' Association that the Victoria and Macknade Mill areas be declared Pest Infested Areas under the SES Act, and compulsory Cane Pests Boards be set up. While CSR did not make an official objection, it certainly encouraged objections by growers. A ballot of growers in February 1934 resulted in 60% of those voting in favour—unlike in Macknade area, there was no grower faction vehemently opposed to the idea. An attempt was made in mid-1935 to set up a single Board for the Herbert district, at the request of the Herbert River Canegrowers' Association. This action failed when the ballot of growers was fairly evenly split due to intense lobbying from a grower group in Macknade.

A separate Disease Control Board was never set up, so in 1942 the Pests Board became the **Victoria Cane Pest and Disease Control Board** which continued to operate up to 1991. It was renamed the **Victoria Cane Protection and Productivity Board** in July 1991 when Boards were given additional powers to work and advise on all cane productivity matters by the Sugar Industry Act 1991. However, in a long-sought move, Macknade growers unanimously voted in 1992 to amalgamate with Victoria Board to form the **Herbert Cane Protection and Productivity Board**. This came into effect from 1st April 1993, after the next election for Board members.

A far greater change occurred in 2003 when some sections of the Sugar Industry Act were amended—statutory Boards were abolished and the right to raise funds by statutory levies was lost. However, Boards were advised in late 1999 of the forthcoming changes, which they could make earlier than 2003 if they wished. After consultation between millowner CSR Ltd, Herbert Canegrowers and the Board, a new company limited by guarantee, **Herbert Cane Productivity Services Ltd (HCPSL)**, was formed to take over all assets of the Board. **Herbert Cane Protection and Productivity Board was dissolved in September 2002**, and replaced by HCPSL.

Work of the Boards

Greyback grub control by purchase of beetles was the major function from the 1890s into the 1920s, but populations could vary greatly from year to year. Beetle numbers declined greatly after 1901, and almost disappeared after the 1915 drought. Yield losses continued at intervals through to the 1940s, and the board continued to purchase beetles until 1948. Fumigation with carbon bisulphide/paradichlor was effective, and was promoted and subsidised, but was costly and unpleasant to use.

BHC offered the first effective insecticidal control of grubs, and was widely used for the first time in 1948. Board staff spent a lot of time in advice to growers, ensuring correct application methods were used. When organochlorine insecticides were banned in the 1980s, staff were involved in demonstrations and advice on application methods for the new suSCon Blue controlled release insecticide.

This began to fail in the early 1990s. Staff were very involved in advice to growers, and in assisting BSES and chemical companies in the on-going research on replacement insecticides and practices assisting good grub control. Newer insecticides arrived in the 1990s and early 2000s, and greyback grubs were once more under control.

Rats were a problem from the early 1900s, and became the major pest problem for much of the 1920s and 1930s. The six separate Pest Funds in Macknade and five in Victoria joined with CSR in annual rat baiting campaigns run by CSR Field Officers, while CSR purchased rat poisons and rat traps at wholesale prices for sale to growers. Despite this, rat populations increased greatly due to favourable weather conditions from the late 1920s, particularly in the early 1930s. CSR research showed percentage of rat-bitten stalks delivered to the mill were 19%, 24% and

33% in 1931–33, with estimated crop loss in 1933 over 5%. The situation began to improve when Victoria Board was formed in 1934 and greater interest in rat control by baiting and harbourage destruction was generated in growers.

However, the rat situation had built up to a crisis point by 1934, with very large populations damaging cane stalks and increasing numbers of field workers and cane cutters affected by Weil's disease. Consequently, the Queensland Health Department formulated a 'Grand Plan' to eliminate rats in the Herbert which involved extensive poisoning campaigns and harbourage destruction, funded mainly by a Special Levy on the sugar industry as outlined in Chapter 6. This was quite successful in the short term but was never repeated. Surplus Levy funds from the campaign were reimbursed to the Board in 1937 for use in rat control.

The board continued to run annual control campaigns, as required by population levels. When machine-packeted thallium baits became available in the 1950s, handling and laying of baits became easier and mechanisation of delivery became possible. CSR Field Officers worked with the Boards in the Herbert in the 1960s to develop aerial rat baiting, which greatly improved coverage and effectiveness of the campaigns.

Problems developed much later requiring more work by Board staff. Thallium was banned as a poison and Boards assisted in testing and approval of newer rodenticides. Rats are native animals, and it became necessary from the mid-1970s to negotiate permits for their destruction. This involved regular monitoring and reporting of populations by Boards.

RSD was a major annual job for the Board. LHWT of cane was commenced in 1953, but the importance of adequate water circulation and precision of temperature was not appreciated for a few years. The initial HWT tank at Victoria mill was soon replaced by a better unit which resulted in fewer escapes and better germination.

Eventually, a 'state-of-the-art' unit with electrical heating and precision temperature control was installed—disease control was excellent and germinations were good. CSR Field Officers and the Board supervisor cooperated in trials to improve the whole system, and were the first to develop the use of whole stalk treatment in place of setts as planting methods changed.

Board staff were involved in inspections to identify diseased blocks, inspection of plant sources, treating cane for growers, and the setting up of Board plots, which later became the source used to provide

nucleus amounts of planting material to growers. Advice was given to growers on better hygiene practices such as sterilisation of knives and cutting devices in machines, and elimination of volunteer stools in fields for planting.

The lessons really hit home when dry seasons emphasised yield losses in diseased blocks in the late 1960s. Much Board work went into recovering from this situation, but it was the mid to late 1970s before RSD incidence was reduced to low levels. RSD control has been very good since the 1980s.

Chlorotic streak is endemic in many localities of the district, and yield losses can be serious in susceptible varieties in poorly drained soils. The causal organism can remain in wet soils for some months and infect new plantings, and is also spread in drainage water from affected blocks.

The Board has concentrated on plant source inspections to maximise use of healthy planting material; ensuring clean seed plots in the RSD control program are planted on CSD-free sites; and advising growers on better drainage within fields as well as improved overall farm drainage. This has been a major objective of the Board since 1991.

Pachymetra root rot occurred widely in the Wet Tropics in the 1970s, causing poor root systems, lodging, stool tipping and lower yields. It came to prominence due to the widespread planting of the productive but susceptible Q90, but occurred in other varieties also.

Staff were involved in advice to growers, particularly after control measures were established and resistant varieties were identified. District surveys were made as required, using oospore numbers in soil samples to identify heavily infested fields, which must be planted with resistant varieties to reduce oospore numbers and avoid yield losses.

Leaf scald caused some problems in the 1930s and earlier. Since 1942, there were some minor problems in Trojan which were not difficult to control. **Gumming** disease had been a problem on several occasions earlier in the 1900s when susceptible varieties were grown, but CSR Field Officers controlled the outbreaks.

By 1942, it had disappeared. **Minor problems** requiring Board input at times included **pineapple disease**, **yellow spot** in the early 1970s when there was a change in the pathogen strain, **common rust** when it first appeared in the mid-1970s in Australia, and **orange rust** when the strain changed in 2000. **Feral pigs** were a problem in some localities.

Productivity issues for Herbert CPPB in the 1991–2002 period included:

- The increased number of growers and area to be serviced after the amalgamation in 1993 meant an increase in staff numbers and a larger space requirement.
- The Board worked out of Canegrowers Building until 1995, then moved to new BSES premises on Fairford Rd with more space to accommodate the 5 full-time employees and allow greater collaboration with BSES.
- A laser levelling service was commenced in 1996 to improve drainage, with CSR Field Officers David Horsley, Tom Peatey and Bob Stewart providing technical support.
- Staff were actively involved in the control of declared weeds such as *Hymenachyne* and Giant Sensitive Plant.
- In 1999 the Board, Herbert River Canegrowers, CSIRO Tropical Agriculture, CSR Sugar Mills Group, Hinchinbrook Shire Council and Qld Dept. of Natural Resources formed a joint venture to create the Herbert Resources Information Centre (HRIC), a not-for-profit Geographic Information Systems (GIS) facility.

Board staff and members

Various CSR Field Officers filled the position of Technical Advisor(Supervisor) to the Board from its inception to 1975, the best known and longest serving being **Ron Farquahar** (1950-62) and **Geoff McIntosh** (1962–75). They ran an efficient operation and closely supervised the field workers and inspection staff. **Jack Barnes** (1976–84) was the first non-CSR supervisor and had to establish his position as supervisor with growers. **Nick Kauppila** was supervisor at Macknade CPPB until the merger in 1993, then continued with Herbert CPPB until his retirement. **Ron Kerkwyk** (1988–2002) was supervisor of Victoria and Herbert CPPBs to 2002, then continued on as manager at HCPSL until retiring in 2011. This covered the move to more productivity work in the 1990s, then the build-up of HCPSL.

As with other CSR mill areas, nearly all chairmen were Victoria mill managers until the late 1980s when grower **Roy Pace** was chairman from 1989 to 1996, and again for the 2000 to 2002 period, after which he

continued on as HCPSL chairman until the present. **Ray Quabba** was chairman for the 1996 to 2000 period but died suddenly while still in office. Both were competent hands-on chairmen who did a lot of work for the Board over a long period. A plaque was erected in the office grounds by the whole Herbert industry in memory of Ray.

POSTSCRIPT

THE 2002–14 PERIOD FOR HCPSL AS A NON-STATUTORY BODY

(provided by Lawrence Di Bella, Manager HCPSL)

In 1999, all CPPBs were advised by Government that the number of statutory Boards would be reduced in due course, which happened in 2003 with amendments to the Sugar Industry Act. Any Board willing to relinquish its status earlier would be assisted to do so.

After consultation between millowner CSR Ltd, Herbert River Canegrowers and the Board, it was decided to take up this option. A company limited by guarantee, **Herbert Cane Productivity Services Ltd (HCPSL)**, was formed to take over all assets of Herbert Cane Protection and Productivity Board, which happened in September 2002.

- The board of HCPSL consisted of 3 grower and 3 millowner members, with **Roy Pace** continuing as Chairman to 2014. **Andrew Wood** was a millowner member until 2012, and provided a wealth of scientific knowledge and advice to the board. **Ron Kerkwyk** was appointed manager until he retired in 2011, when **Lawrence Di Bella** succeeded him.
- In 2004, Field Services and Harvest Management were transferred from CSR Mills to HCPSL, together with the 2 CSR staff responsible for cane consignment, crop estimates and harvest management. They became HCPSL staff in 2006.
- In 2006, smut was discovered in South Queensland, and this triggered major inspections throughout the state. It was found to be a major problem in the Herbert, with some popular but susceptible varieties heavily infected. A control campaign over several years was carried out to build up stocks of resistant varieties to replace these as soon as possible and so reduce yield losses.

- In 2006, Ron Kerkwyk(manager), Lawrence Di Bella(BSES) and 3 others from the industry undertook a SRDC Travelling and Learning project to Brazil and Cuba. They investigated harvest management and precision agricultural systems being developed for the Brazilian sugar industry by Techagro, a Cuba based company.
- In 2007, a project funded by the Qld Government commenced, which enabled the real time tracking of harvesters. HCPSL set up a base station network, and GPS units, modems and yield monitors had to be fitted to harvesters. Techagro was employed to develop the harvester tracking and yield monitoring systems, and relocated 7 staff from Brazil and Cuba to work with HCPSL and HRIC.
- In 2011 HCPSL established linkages with outside organisations like universities, government departments and SRA to undertake research, development and extension activities which were relevant to the Herbert cane industry. Currently HCPSL administers and runs 10 projects with various organisations.
- From 2011 to 2014, HCPSL carried out research on some controlled release urea fertiliser products in conjunction with Everris, in order to minimise nutrient run-off into the Reef. This research led to the commercial adoption of enhanced efficiency nitrogen products by the industry, and a significant development of knowledge in this field. An industry delegation visited USA sugarcane and horticultural industries in 2012 to review the commercial use of these products and associated research.
- In 2011, when advised that BSES extension advisory services were to be discontinued, HCPSL announced that it would take over all advisory work in the Herbert at that time.
- In 2013, HCPSL announced that it would employ all ex-BSES Herbert extension staff to provide extension services to the Herbert industry. It also took over the lease of the BSES building. Full time staff now totalled 12.

- In 2013 land was leased from Wilmar Sugar at its Stone River farm to establish an Approved Seed mother plot to supply cane to its other Approved Seed plots and to individual growers.
- In 2014 the old CSR Macknade Technical Field Office and farm was leased from Wilmar Sugar. HCPSL conducts research activities with partner groups at this site, and also uses it as an Approved Seed plot.
- In 2015 Wilmar Sugar took over the sugar industry related activities of HRIC after withdrawing from it, but will continue to share information with HCPSL. The harvest management systems developed by HCPSL will be implemented at all Wilmar sugar operations in Australia and overseas.

16.10 MACKNADE

In late 1895, Halifax growers agreed to start a coordinated campaign to purchase beetles, and invited Macknade and Ripple Creek plantations to join in. This was the beginning of the **Halifax Planters' Club Pest Destruction Fund, Macknade Beetle Destruction Fund and Ripple Creek Beetle Fund**. The voluntary levy was 1/- per acre, and CSR agreed to subsidise this. The 1896–98 campaigns were also subsidised by Government, which required a central committee, the **Herbert River Pest Destruction Fund**, to be set up in 1896 in the Herbert, through which funds were channelled.

Control returned to individual funds in Macknade Mill area around 1900, and they maintained their separate operations until the 1930s. Little individual information is available for that period, but we know that **Macknade, Ripple Creek, Halifax and Cordelia Funds** operated in 1908 (CSR Ann Rep, 1908), and that Funds continued to buy beetles over the 1897–1918 period (Illingworth, 1919).

Six Funds operated in Macknade area in 1929: **Gairloch Beetle Fund, Gairloch North Farmers Association Beetle Fund, Halifax Planters Club Pest Destruction Fund, Hawkins Creek Pest Destruction Fund, Macknade Pest Destruction Fund and Ripple**

Creek Beetle Fund. Rats had become an increasing problem in the 1920s, and the various Funds in the Herbert held regular meetings to coordinate poisoning campaigns in liaison with Macknade and Victoria Mill management. The Minutes of such a meeting in September 1929 also discussed the desirability of establishing a Central Fund.

In early 1931, the Herbert River Farmers League and two of the Funds requested that all six Funds be constituted as compulsory Pests Boards. This was refused by the Minister on the basis that a mill area Board was appropriate but six small ones were not.

In November 1933, the Herbert River Canegrowers' Association requested that the Macknade and Victoria mill areas be declared Pest Infested Areas, and a compulsory Cane Pests Board be set up. While CSR said it would not make an official objection, it certainly encouraged objections by growers. A ballot was held in February 1934 to determine growers' wishes on the matter—only half the growers voted in Macknade area but 55% of these opposed the action. Although the Minister could legally set up a statutory Cane Pests Board in these circumstances, it was decided to take no action at present.

This spurred on Macknade Mill management and the six voluntary Funds to recommend formation of a single Board for the mill area. A growers' meeting in March 1934 voted unanimously to form the **Macknade Pest Destruction Board**, which CSR agreed to subsidise on a 1:2 basis.

In March 1935, the Herbert River Canegrowers' Association asked that a single compulsory Board be established in the Herbert, and this was supported by both Macknade and Victoria Mill Suppliers' Committees.

This action was sought in response to the 1934 rat campaign disagreements in Macknade (see below). CSR and its grower allies now vehemently opposed any government 'interference' and a ballot of growers became necessary—53% opposed the idea so it was dropped.

Macknade remained as a voluntary Board up to 1993, and was in fact the only voluntary one following Goondi's wind-up in July 1987. Meanwhile, statutory Cane Pest and Disease Control Boards were given additional powers in 1991 to work and advise on all cane productivity matters. Macknade growers voted unanimously in 1992 to **amalgamate with Victoria CPPB to become the Herbert Cane Protection and Productivity Board**, which became effective from 1st April 1993 after elections for the enlarged board were held.

Work of the Funds/Boards

Greyback grub control was the major function from the 1890s into the 1920s, but populations could vary greatly from year to year. Illingworth (1919) quoted from itemised Macknade Mill records over the 1897–1918 period on money expended. Beetle numbers declined greatly after 1901, and almost disappeared after the 1915 drought, but £11,273 was paid out by the funds during the 20 years period. Yield losses continued at intervals through to the 1940s, and the board continued to purchase beetles until 1948. Fumigation with carbon bisulphide/paradichlor was promoted and subsidised, but was only used when heavy beetle flights had occurred.

BHC offered the first effective insecticidal control of grubs, and was widely used for the first time in 1948. Board staff spent a lot of time in ensuring correct application methods were used. When organochlorine insecticides were banned in the 1980s, staff were involved in demonstrations and advice on applications methods for the new suSCon Blue controlled release insecticide.

This began to fail in the early 1990s. Staff were very involved in advice to growers, and in assisting BSES and chemical companies in the on-going research on replacement insecticides and practices assisting good grub control. Newer insecticides arrived in the 1990s and early 2000s, and greyback grubs were once more under control.

Rats were a problem from the early 1900s, and became the major pest problem for much of the 1920s and 1930s. The six separate Pest Funds in Macknade and five in Victoria joined with CSR in annual rat baiting campaigns run by CSR Field Officers, while CSR purchased rat poisons and rat traps at wholesale prices for sale to growers.

Despite this, rat populations increased greatly due to favourable weather conditions from the late 1920s, particularly in the early 1930s. CSR research showed percentage of rat-bitten stalks delivered to the mill were 19%, 24% and 33% in 1931–33, and estimated crop loss in 1933 was over 5%. The situation improved when Macknade Board was formed in 1934 and greater interest in rat control was generated in growers.

However, the rat situation had built up to a crisis point by 1934, with very large populations damaging cane stalks and increasing numbers of field workers and cane cutters affected by Weil's disease. Consequently, the Queensland Health Department formulated a 'Grand Plan' to eliminate rats in the Herbert which involved extensive poisoning

campaigns and harbourage destruction, funded mainly by a Special Levy on the sugar industry as outlined in Chapter 6. This was quite successful in the short term. However, serious disagreements arose between CSR, Macknade Board and Health Department officials on methods and timing of baiting, overall control of the campaign, and whether reimbursement should be made to the voluntary Macknade Board for baits laid without prior approval and supervision by Health Department. It was eventually resolved but reimbursement of surplus Levy funds to Macknade Board for use in rat control did not occur until 1938. All of this reinforced the opinion of CSR and its grower allies that any government control should be avoided like the plague.

Annual control campaigns continued, eg in 1947, £2,736 was spent on rat baits handed out to growers. When machine-packeted thallium baits became available, handling and laying of baits became easier and mechanisation of delivery became possible. CSR Field Officers worked with the Board in the 1960s to develop aerial rat baiting which greatly improved coverage and effectiveness of the campaigns. Problems developed much later requiring more work by Board staff. Thallium was banned as a poison and Boards assisted in testing and approval of newer rodenticides. Rats are native animals, and it became necessary from the mid-1970s to negotiate permits for their destruction. This involved regular monitoring and reporting of populations by Boards.

RSD was a major annual job for the Board. LHWT of cane was commenced in 1953, but the importance of adequate water circulation and precision of temperature was not appreciated for a few years. The initial HWT tank at Macknade mill was soon replaced by a better unit, which was upgraded a few times until a 'state-of-the-art' unit with electrical heating and precision temperature control was installed. Disease control was excellent and germinations were good. CSR Field Officers improved the whole system, and were the first to develop the use of whole stalk treatment in place of setts.

Board staff were involved in inspections to identify diseased blocks, inspection of plant sources, treating cane for growers, and the setting up of Board plots. Later, these plots were used to provide enough nucleus amounts of clean planting material to growers to propagate for the following year's commercial planting. Growers were advised on better hygiene practices such as sterilisation of knives and cutting devices in machines, and elimination of volunteer stools in fields for planting. The lessons really hit home when dry seasons emphasised yield losses in

diseased blocks in the late 1960s. Much Board work went into recovering from this situation, but it was the mid to late 1970s before RSD incidence was reduced to low levels. RSD control was very good from the 1980s.

Chlorotic streak is endemic in many localities of the district, and yield losses can be serious in susceptible varieties in poorly drained soils. The causal organism can remain in wet soils for some months and infect new plantings, and spreads in drainage water flowing from affected blocks. The Board concentrated on plant source inspections to maximise use of healthy planting material; ensure clean seed plots in the RSD control program were planted on CSD-free sites; and advise growers on better drainage within fields as well as improved overall farm drainage.

Pachymetra root rot occurred widely in the Wet Tropics in the 1970s, causing poor root systems, lodging, stool tipping and lower yields. It came to prominence due to the widespread planting of the productive but susceptible Q90, but occurred in other varieties also. Staff were involved in advice to growers, particularly after control measures were established and resistant varieties were identified. District surveys were made as required, using oospore numbers in soil samples to identify heavily infested fields, which must be planted with resistant varieties to reduce oospore numbers and avoid yield losses.

Leaf scald caused some problems in the 1930s and earlier, and there were minor problems in some varieties from the 1940s. **Gumming** disease had been a problem on several occasions earlier in the 1900s when susceptible varieties were grown, but CSR Field Officers controlled the outbreaks. By 1942, it had disappeared. **Minor problems** requiring Board input at times included **pineapple disease**, **yellow spot** in the early 1970s when there was a change in the pathogen strain, and **common rust** when it first appeared in the mid-1970s in Australia. **Feral pigs** were a problem in some localities.

Board staff and members

CSR maintained a staff of two Field Officers at Macknade mill for general pest and disease control and other experimental work. The Technical Advisor/Supervisor to the Board from its formation in 1934 to 1976 was a CSR Field Officer, the best known and longer serving being **Ken Gard** (1937–57), plant pathologist **Perry Robinson** (1958–63) and **Roger Barringham** (1963–69). They ran efficient operations on behalf of the Board, and oversaw the field work done by other employees.

A full-time supervisor was first employed in 1977, the second being **Nick Kaupilla** from 1979 to amalgamation in 1993.

From Fund/ Board formation, it was customary in CSR mill areas for the Mill Manager to be Chairman. There were 11 such chairmen over the 1934–92 period, the longest serving in recent years being **Phil Sefton**(1976–82) and **Lionel Martin** (1982–90).

16.11 INVICTA

Invicta Mill area consisted of two major parts up to 1958—‘South of Townsville’ situated mainly near the mill site at Giru; and ‘Ingham Line’ situated along the rail line and road to Townsville, from just south of Ingham to south of Rollingstone. These parts had little in common except to supply the same mill. The mill area had six different statutory Boards at various times during the 1924–1991 period, with Boards operating in parallel in the two major areas for 29 years from 1929 to 1958.

Invicta (Ingham Line) Cane Pests Board was constituted on 24 August 1929. This area suffered from the same cane grub and rat problems as did the adjacent Victoria mill area. It also had the example of the various voluntary Boards in the Victoria and Macknade mill areas, but there is no evidence that it ever had a voluntary fund. Canegrub and rat problems probably precipitated a request for the Board. A Disease Board was never formed in the area.

Invicta (Ingham Line) Cane Pest and Disease Control Board began operating on 1 April 1942, when all Boards were converted to joint operations. It later lost assigned area to Victoria Mill and was too small for economic operations, so it was **amalgamated with the South of Townsville Board from 1 April 1958**.

Lower Burdekin Cane Pests Board was constituted in early 1924 for the whole of the Burdekin area, including Invicta (South of Townsville). It was split into its four constituent parts, Inkerman, Kalamia, Pioneer, Invicta, in 1935, so **Invicta (South of Townsville) Cane Pests Board** was constituted on 30 November 1935. It operated until 1 April 1942 when it was renamed the **Invicta (South of Townsville) Cane Pest and Disease Control Board** when all Boards

became joint operations. The Board sought to amalgamate with Ayr Board in 1957 but this was rejected by the BSES Board and the Minister. However, the Ingham Line Board was amalgamated with it in 1958.

Invicta Cane Pest and Disease Control Board was constituted for the whole of Invicta mill area on 1 April 1958, and continued to operate up to 1991. Meetings alternated between Giru and Ingham until all of the Ingham Line assignments were transferred to Victoria Mill in 1966. It was renamed the **Invicta Cane Protection and Productivity Board** in July 1991, when Boards were given additional powers under the Sugar Industry Act 1991 to work and advise on all cane productivity matters, while retaining their existing powers on pest and disease control.

However, much greater change was to come in 2003 when some sections of the Sugar Industry Act itself were amended—statutory boards were abolished as was the right to raise funds by statutory levies. Millowner CSR Ltd and all three Canegrower groups in the Burdekin area were consulted on a future structure for the three Productivity Boards. It was agreed that a single non-statutory corporate body, **Burdekin Productivity Services Ltd**, should be set up for the whole Burdekin district, rather than continue on with three separate bodies. Consequently, **Invicta Board was dissolved in early 2004** (as were Ayr and Inkerman Boards), and **replaced by BPSL**, a company limited by guarantee and registered on 27 February 2004.

Further information on BPSL and matters of importance in the whole Burdekin area for the 2004–2014 period are provided at the end of section 16.12 Lower Burdekin/Ayr.

Work of the Boards

The **Ingham Line Boards** always operated on a shoestring budget because of their small size, and could never afford a permanent employee. Canegrub and rat problems would have been important. Purchase of beetles probably occurred from 1929. We know that the Board bought them in 1938 and 1939, but decided to stop in 1940.

Lower Burdekin Pests Board certainly purchased beetles over the 1924–35 period in the Burdekin area, presumably within Invicta mill area also. **Invicta (South of Townsville) Boards** were not very active, and one of the cane inspectors was deputed to keep an eye out for anything unusual. All ‘old’ records prior to 1960 were destroyed in the mid-1960s. **Greyback grubs** would have been a problem, but BHC usage had fixed that.

The new **Invicta Board** appointed the first ever supervisor for the area at its initial meeting in 1958, and he had to spend a set amount of his time in Ingham Line area each month. The work of the Board during the late 1950s to 1960s comprised mainly the provision of HWT tank facilities and clean seed plots for **RSD** control. The initial steam treatment tank was at the mill but a modern electric tank was built in Clare in the late 1960s to service Invicta's new up-river areas. In 1976, as in all Burdekin areas, a **leaf scald** outbreak occurred in the susceptible Q63. A control program mapped out by BSES and implemented by local Boards enabled leaf scald to be eliminated by the mid-1980s. From 1977, all Invicta growers had to purchase a nucleus of clean seed cane each year from Board plots, and Q63 was quickly replaced by the more resistant Q96. The enduring legacy of this epidemic for Invicta area was a Clean Seed Scheme in which every grower participated, with good control of RSD and lasting productivity benefits.

Productivity issues for Invicta CPPB in the 1991–2003 period included:

- Widespread yield losses from greyback grubs as suSCon Blue degraded prematurely in the alkaline soils, until new products were available.
- Yield problems on up-river duplex soils until growers learnt to farm differently.

Board Staff and Members

Arnold Johnson was supervisor from 1958 to 1976. He was a lanky fellow with a dry voice and dry wit, who liked to poke about on farms and knew them well. **Rod Schulz** was supervisor from November 1976 until early 2004, and continued as Productivity Officer with BPSL until he retired in 2005.

Lyll Brain was chairman (and mill manager) from 1964 to 1977, and took a strong interest in Board operations. **J K Lyons** was the longest serving member and chairman, from 1982 to 1998.

16.12 LOWER BURDEKIN/AYR

There were few reports of major pest or disease problems in the Burdekin area until about 1920, when greyback canegrubs were noted

near Ayr. They built up quickly and precipitated the request by growers for a statutory Pests Board. No voluntary funds ever operated.

Lower Burdekin Cane Pests Board was constituted for the whole of the Burdekin area in April 1924, about the same time as the Mackay and Plane Creek Boards.

After 12 years operating, the Board was split on 30 November 1935 into four parts based on mill areas: Invicta (South of Townsville) and Inkerman (see 16.11 and 16.13), and Pioneer and Kalamia. **Pioneer Cane Pests Board** and **Kalamia Cane Pests Board** were constituted on 30 November 1935 but operated as separate entities for only six years until 1942, rectifying the decision to form two Boards in 1935. Disease Boards were never formed in these areas.

Lower Burdekin Cane Pest and Disease Control Board was constituted on 1 April 1942, taking over the Pioneer and Kalamia Boards and their assets. A supervisor was appointed in May 1942, and he was probably the first full-time supervisor for any of these Boards.

The name was amended to **Ayr Cane Pest and Disease Control Board** on 4 June 1949, ostensibly to avoid confusion with other Boards in the district, and operated until 1991.

It was renamed the **Ayr Cane Protection and Productivity Board** in July 1991, when Boards were given additional powers under the Sugar Industry Act 1991 to work and advise on all cane productivity matters, while retaining their existing powers on pest and disease control.

However, much greater change was to come in 2003 when some sections of the Sugar Industry Act were amended—statutory boards were abolished as was the right to raise funds by statutory levies. Millowner CSR Ltd and all Canegrower groups in the Burdekin area were consulted on a future structure for the three Productivity Boards.

It was agreed that a single non-statutory corporate body, **Burdekin Productivity Services Ltd(BPSL)**, should be set up for the whole Burdekin district, rather than continue on with three separate bodies.

Consequently, **Ayr Board was dissolved in February 2004** (as were Invicta and Inkerman Boards), **and replaced by BPSL**, a company limited by guarantee and registered on 27 February 2004.

Further information on BPSL and matters of importance in the whole Burdekin area for the 2004–2014 period, are provided at the end of this section.

Work of the Board

Grub control was attempted by Lower Burdekin Pests Board by purchasing beetles from 1924, but little was spent until the 1928–35 period. Pioneer and Kalamia Boards are believed to have continued purchases in the 1935–42 period. Fumigation with carbon bisulphide was promoted by the Boards in the 1930s, probably with subsidisation of the chemical.

The new Pest and Disease Control Board in 1942 continued to buy beetles and paid out £1500 in November/December 1942 before spending more in early 1943. Lopping and poisoning of feeding trees was done on a wide scale, and carbide lights were sold to collectors to assist in catching beetles, but damage continued. The Board actively promoted the use of BHC and heptachlor from the late 1940s until all organochlorines were banned in the mid-1980s.

Use of the new suSCon Blue controlled-release insecticide gave good results for some years. Grub damage occurred periodically but the Board noted worrying increases from the late 1980s into the 1990s as control measures began to fail. The full force of this canegrub epidemic did not come until after the change to a Productivity Board in 1991. Staff were very involved in advice to growers, and in assisting BSES and chemical companies in research on replacement insecticides and practices assisting good grub control. Newer insecticides arrived in the 1990s and early 2000s, and greyback grubs were once more under control.

RSD was a major problem, particularly when water was limiting. HWT tanks were set up at Kalamia Mill and also at the Board's offices on Old Clare Road. From the beginning in 1953, the Board decided to grow treated cane in plots, from which growers purchased enough cane to supply their commercial needs in the next year.

The main plots were near the Board's offices, which were rebuilt in 1976 and incorporated a large electrically heated HWT tank. A phase contrast microscope was purchased jointly by Burdekin Boards in the early 1980s to give more accurate diagnosis of RSD in plant sources, and housed at the Clare Rd office.

Major RSD epidemics recurred in the late 1950s and end of 1960s/early 1970s, partly due to failures to purchase enough clean plants despite Board pressure. The leaf scald outbreak in 1976 made a Clean Seed Scheme mandatory and resulted in good RSD control into the 2000s.

Leaf scald was found in the Burdekin for the first time in 1976 in Q63, and inspections monitored it as it became widespread. A Clean Seed Scheme was introduced, with an isolated jointly-operated District Mother Plot to produce disease-free plants for use on the Board's plots supplying growers. The popular but susceptible Q63 was banned from planting, diseased blocks were ploughed out early, and Compulsory Plant Source Inspections were introduced. Leaf scald was cleared out quickly without causing large yield losses. By the mid 1980s the area was considered disease-free, and the Mother Plot was no longer required. The legacy of the epidemic was a Clean Seed Scheme in which every grower participated, with lasting productivity benefits.

Several other problems on which Board and staff worked are worthy of mention. **Striate mosaic** was a locally serious problem on certain blocks on over 40 farms since the late 1950s, but relatively few continued to show symptoms after resistant varieties were grown for long periods. **Downy mildew** had been a problem in the 1930s but was virtually under control when the CPDC Board started in 1942. There were minor outbreaks of **mosaic** in the 1930s to 1950s which were easily controlled. Severe **locust** plagues came to the Burdekin on a few occasions, requiring extensive insecticidal spraying. **Wallabies** caused considerable damage at times and were named as one reason for setting up the Board in 1924. **Itch grass** was a declared cane pest and was reduced to insignificance in a long inspection and weedicide campaign.

Productivity issues for Ayr CPPB in the 1991–2003 period included:

- Greyback grubs caused heavy yield losses as suSCon failed due to alkaline soils and water, until it was replaced by new insecticides.
- Rats, Purple Swamp Hen, Pigs & Wallabies continue to cause minor crop losses overall.

Board Staff and Members

Jack Boylan became supervisor in May 1954, a position he held for 33 years until retirement in July 1987. Jack was a quiet fellow who was dedicated to the Board and his staff, knew his area and his growers, got the job done, but was always ready to seek advice. **Terry Hall** was an inspector from 1970, then deputy to Jack until he succeeded him as supervisor in July 1987, a position he held until 2004 when the Board was abolished, then continued on in BPSL for a short period. He

discovered the leaf scald outbreak in the area in 1976, and was responsible for the successful itch grass control program.

Paul Sayers became Chairman at the inaugural CPDCB meeting in April 1942, was active in directing affairs until his death in 1972, and always participated well at Pest Board Conferences. **Dick Hughes** was a member from 1963 and Chairman from 1972 to 1989. He was a hands-on Chairman in the campaign to control RSD, leaf scald and itch grass, and enjoyed participating in discussions and debates at Pest Board Conferences. **John McLaughlin** was a member for 27 years from 1963 to 1990, and his input into Board affairs was continuous. **George Kelly** was elected in 1972, and remained a member until 1990 by which time he was Deputy Chairman. **Gordon McComskie** was a millowner's member from 1977 to 1991 who provided valuable inputs in the various control campaigns. He was Chairman from 1989 to 1991.

POSTSCRIPT

BURDEKIN PRODUCTIVITY SERVICES LTD: THE 2004–14 PERIOD AS A NON-STATUTORY BODY

When all Burdekin District CPP Boards were to be abolished by amendment of certain sections of the Sugar Industry Act in 2003, mill owner CSR Ltd and all Canegrower groups were consulted on their future structure within the Burdekin area. It was agreed that a single non-statutory corporate body should be set up for the whole Burdekin district, rather than continue on with three separate bodies. Consequently, **Burdekin Productivity Services Ltd**, a company limited by guarantee, was registered on 27 February 2004 and took over all assets of the Ayr, Inkerman and Invicta Boards when they were dissolved.

Major items dealt with included:

- Paul Sgarbossa, formerly chairman at Inkerman, became chairman of BPSL.
- Main office & staff centre were located at 210 Old Clare Rd., Ayr.
- Don Pollock was appointed as Manager, while Rod Schultz & Don Williams, formerly supervisors at Invicta and Inkerman, managed seed cane distribution & pest/disease matters respectively. The field officers were Ray Hildebrandt, Brendan Arboit & Davis Urberuaga.

- Established closer cooperation with BSES on productivity and extension work.
- When the BSES Extension and Advisory Service was discontinued in 2012, BPSL took over all advisory work in the Burdekin, employing extra staff.
- Smut disease was discovered in south Queensland in 2006, and this triggered inspections throughout the state. When it was located in the Burdekin area, considerable effort went into determining its extent and effect on susceptible varieties, then undertaking a control program to replace them as soon as possible.
- BPSL organises one of the best seed cane distribution systems in the world, thanks to the combined efforts of Mill Supplier Collectives and well trained staff. In 2014, over 6,500 tonnes of clean and commercial cane was sold from the seed cane plots to growers throughout the district.

16.13 INKERMAN

The Inkerman area formed part of the **Lower Burdekin Cane Pests Board** from April 1924. The Mill Suppliers' Committee had been unhappy with the situation for several years before officially requesting its own Board in May 1934. There were no major pest problems in the area at that time—they just wanted to be separate. The request was refused by the Minister as unnecessary, but within 18 months the decision was reversed.

Inkerman Cane Pests Board was constituted on 30 November 1935, and operated until March 1942. A Disease Control Board was never formed in the area. **Inkerman Cane Pest and Disease Control Board** was constituted on 1 April 1942 to replace the above Board, and continued to operate until 1991. It was renamed the **Inkerman Cane Protection and Productivity Board** in July 1991, when Boards were given additional powers under the Sugar Industry Act 1991 to work and advise on all cane productivity matters, while retaining their existing powers on pest and disease control.

However, much greater change was to come in 2003 when some sections of the Sugar Industry Act were amended—statutory boards were to be abolished by 30 June 2004 as was the right to raise funds by statutory levies. Millowner CSR Ltd and all Canegrower groups in the

Burdekin area were consulted on a future structure for the three Productivity Boards. It was agreed that a single non-statutory corporate body, **Burdekin Productivity Services Ltd(BPSL)**, should be set up for the whole Burdekin district, rather than continue on with three separate bodies. Consequently, **Inkerman Board was dissolved in early 2004** (as were Ayr and Invicta Boards), and replaced by BPSL, a company limited by guarantee and registered on 27 February 2004.

Further information on BPSL and matters of importance in the whole Burdekin area for the 2004–2014 period are provided at the end of section 16.12 Lower Burdekin/Ayr.

Work of the Boards

Greyback grub control measures usually centred on the purchase of greyback beetles from 1928, and fumigation with carbon bisulphide during the 1930s. Both these control measures were promoted strongly by Inkerman Board until the mid-1940s. In addition, beetle-feeding trees were destroyed on 700–800 acres of scrub on the riverbank near Home Hill in 1939–40. The idea had been promoted at the 1939 Pest Board Conference, following on from the Basilisk Range clearing at Innisfail. No reports were ever presented on the effects, if any, on grub damage nearby.

The introduction of BHC insecticide in the late 1940s resulted in good grub control for many years. The Board actively promoted it, and a 33% subsidy on BHC was introduced in the early 1950s. It also tried to reduce costs by buying BHC concentrate and mixing it locally with fine sand. That failed as a uniform blend could not be achieved so some grub damage still occurred. Heptachlor sprays produced very good results, even after BHC started to fail. When organochlorine insecticides were banned in the mid-1980s, the Board fought to retain heptachlor but failed.

The use of the new suSCon Blue controlled–release insecticide gave good results for a number of years, but a major grub epidemic was brewing from the end of the 1980s. From the early 1980s, the Board pioneered the use of aerial inspections and photography to map infestations, giving a good insight into their activity over the years. Staff were deeply involved in these surveys and providing advice to growers. Staff have been involved over many years in assisting BSES and chemical companies to research a range of insecticides and practices for good grub control.

RSD became the major problem for the area from the early 1950s. The Board was one of the first to HWT cane in 1952 at a steam heated tank at the mill, and followed up with a big program in 1953. It had so much 'clean cane' available in 1954 that it could sell reasonable tonnages to other areas in Queensland. The HWT tank at Inkerman Mill was replaced by a bigger, more efficient system in 1966. Initially, the Board operated from several small plots, and growers were actively encouraged to purchase enough disease free plants each year so that they could supply their commercial needs in the following year. Before long, a large plot was leased for growing much larger tonnages of clean plants under well-controlled conditions. In the 1990s, a 78 ha cane farm was purchased in conjunction with Inkerman Canegrowers, establishing a permanent site for the production and distribution of approved plants.

The system worked particularly well for most of the time, partly because of the forceful personality of supervisor Leo McGee. Major RSD problems occurred on farms in the late 1950s and end of the 1960s, but these were quickly overcome. The leaf scald outbreak in 1976 made a Clean Seed Scheme mandatory, and this resulted in good RSD control into the 1990s.

Leaf scald was found in the widely grown but very susceptible Q63 in 1976, as happened for the rest of the Burdekin area. Board staff were involved in disease inspections, monitoring the epidemic as it spread to new locations, and advice to growers. Quick decisive action by BSES and Burdekin Boards controlled the epidemic with minimal yield losses in diseased blocks. A Clean Seed Scheme was introduced with an isolated, jointly operated, District Mother Plot producing healthy plants for the Board's plot supplying growers.

Compulsory Plant Source Inspections were introduced, Q63 planting was banned, and accelerated ploughout of diseased blocks was introduced. The area was considered free of leaf scald by the mid-1980s. The legacy of the epidemic was an improved Clean Seed Scheme in which all participated, with lasting productivity benefits for the whole Burdekin area.

Several other problems for the Board and staff are worth mentioning. **Downy mildew** and **mosaic** were declining but still present in small amounts in the early formative years, and were easily brought under control. **Striate mosaic** has been identified on 33 farms in total, causing concern to a number of growers over the years, with heavy losses on certain blocks in ratoons of susceptible varieties.

Wallabies were pests from the earliest days, and the Board paid a bonus on scalps until the mid-1970s. Severe **locust** plagues came to the Burdekin on a few occasions, requiring extensive insecticidal spraying. **Rats** and **feral pigs** were restricted in their attacks, but could cause considerable local damage. **Itch grass** was found on several farms, but these growers were assisted in eradicating it before the outbreaks could spread further.

Productivity issues for Inkerman CPPB in the 1991–2003 period included:

- Widespread yield losses from greyback grubs as suSCon Blue degraded prematurely in the alkaline soils, until new products were available.
- Some striate mosaic problems also.

Board Staff and Members

Leo McGee was supervisor from 1944 to 1970. He was a forceful character and a rough diamond, who told his growers what they had to do, and they did it! He was mainly responsible for getting the initial grower response to the clean seed program in the early 1950s, and ensuring that they continued to toe the line. **Don Williams** became supervisor in 1970, continued to hold the position to 2004, then continued in a senior role with BPSL. A conscientious operator, Don maintained the good cooperation between growers and supervisor bequeathed to him by Leo, but in a different way.

Bob Mann was a grower member for 18 years from 1966–84, the last 15 years as chairman. He ran an efficient and effective Board. **Harry Ramsden** was a member for 33 years from 1960–1993, with the last nine years as chairman. He followed his father who was a member for 22 years during the 1935–60 period. Harry was a voluble participant in Pest Board Conferences who was never afraid to stand up for Inkerman and Pest Board rights, and believed passionately in better pest and disease control. **Paul Sgarbossa** was a member for 12 years and chairman for the last 11 years from 1993 to 2004. He continued on as chairman of BPSL.

Other grower members who deserve mention include **Jim Berryman** (member and chairman for 12 years, 1954–66), **Ernie Ford** (member for 18 years 1951–69, and chairman for 1966–69), and **Howard Woods** (member for 21 years, 1969–90). Millowner members tended to serve much shorter terms, but many provided valuable inputs. Secretaries

also tended to be long serving, with **Tom Breen** serving 23 years in 1948–71, and **Jim Bourke** 16 years in 1974–91.

The continuity of service of Board members and staff was a valuable feature. Their abilities and expertise resulted in problems being dealt with quickly and efficiently, a matter on which the Board was justifiably proud.

16.14 PROSERPINE

The **Proserpine Grub Pest Fund** was established in late 1898 at the behest of the Proserpine Farmers' Association, when Proserpine Central Mill agreed to pay 6^d per pound for beetles. Canegrubs were not causing a lot of damage, but it was thought wise to reduce their numbers.

The **Proserpine Insect Pest Destruction Committee** was set up in August 1900 by the Farmers' Association to control the Fund's operations. It was funded by a voluntary levy, initially 1^d per ton of cane crushed, plus Government subsidy. Levy rates were set annually and varied from zero to 3^d per ton, depending on circumstances (Cane Growers Executive records). The Fund was terminated in 1953, since the use of BHC for canegrub control removed the reason for purchasing beetles and grubs.

The statutory **Proserpine Cane Pest and Disease Control Board** was constituted on 19th December 1953, became operative on 1st April 1954, and continued up to 1991. Diseases had not been particularly obvious in Proserpine, but the discovery of RSD throughout Queensland showed the need for a Board there. The Cane Growers' Executive, with Mill support, requested that a Board be set up, and the mill area was declared cane pest and disease infested in December 1953.

The establishment of Proserpine Board was the final act in bringing all canegrowing areas in Queensland under an organised system of pest and disease control. The Board was renamed the **Proserpine Cane Protection and Productivity Board** in 1991, when Boards were given additional powers under the Sugar Industry Act to work and advise on all aspects of cane productivity.

A far greater change occurred in 2003 when some sections of the Sugar Industry Act were amended—statutory Boards were to be

abolished by 30 June 2004 and the right to raise funds by statutory levies was lost. After consultation between the mill, Proserpine Canegrowers and the Board, it was agreed that **Sugar Services Proserpine** would be formed as the entity to replace the Board and take over all its assets when it was abolished in 2003.

Work of the Fund/Board

The Fund and Committee were established primarily to purchase beetles as a **canegrub** control measure, and did so continuously until 1953. In the 1900–01 season, it purchased almost 3 tons of beetles at £167 (6^d/pound), while in its final 1953 season, only 0.12 tons (276 pounds) were bought for £10.5 (9^d/pound).

Minutes of Committee meetings for 1900–1930, and annual income and expenditure statements for 1900–1954 showing payments for various pests, were still held by Proserpine CANEGROWERS in 2000 but have since been shredded. Some of this information was included in *A Crystal Century* (Kerr, 1997), a History of Proserpine Mill.

By 1904, the price of some beetles was increased to encourage whites to collect—kanakas had done most of the collecting, but were being repatriated. The price of green and gold beetles was raised to 1/- per pound, while the common brown beetles were paid for at 9^d, then 6^d, then 1/- by 1907, when 8 tons were purchased in total. This demonstrates the poor scientific basis in Queensland for beetle collection at that time, since the ‘green and gold beetles’ were **not** cane pests.

In 1916, the first mention is made of buying grubs as well as beetles, at 6^d per pound. The Fund continued to buy grubs until its closure in 1953. It also started to pay for wallaby scalps and coot heads, and to subsidise the purchase of wire netting, by the mid-1930s.

Government subsidy was paid to the Fund from its inception until at least 1927, when it is known to have received £209, and probably until 1930 when subsidy ceased. The money came from the Sugar Fund, rather than government coffers, from around 1909. In 1914, the Department agreed to pay subsidy also on any funds used for the destruction of weevil borers and grasshoppers.

Greyback grubs were still the major pest until the late 1940s, causing heavy losses in many years, until the advent of BHC in the late 1940s provided good control. A lot of time was spent in advice to growers on correct application methods.

By the late 1960s, **Frenchi grubs** became more prominent as better varieties allowed older ratoons to be grown, and a different technique was required. However, all organochlorine insecticides were banned in the 1980s. The controlled release insecticide suSCon Blue was introduced, and a new placement technique had to be taught to growers. Unfortunately, suSCon began to fail in some circumstances in the 1990s, and staff assisted growers to use newer insecticides

Rats were a problem before the Board's establishment, but became more important with mill area expansion. The Board provided rat baits and later organised aerial rat baiting campaigns as required. When use of thallium baits was banned, staff assisted growers with use of the new rodenticides.

From the mid-1970s, it became necessary to negotiate permits for destruction of native animals, including rats. This involved regular monitoring and reporting on rat populations by Boards. **Feral pigs** caused localised damage at times, requiring help with traps and accreditation for permits to shoot pigs on adjacent state lands. **Soldier flies** were a minor problem in some localities.

RSD control was the major focus for the CPDC Board when it became operative in 1954, and continued to be so into the 2000s. The mill had constructed a small HWT tank in 1953, but this was upgraded a few times until 1978 when a larger and more efficient unit was built.

Like most areas, Proserpine initially had difficulties in getting enough growers to treat cane or purchase healthy stocks from clean seed plots established in several locations. Grower education programs were upgraded on occasions through the 1960s to 1980s as a few drought periods showed up yield losses in infected fields. Use of approved or inspected plant sources improved greatly as a result.

Leaf scald disease also became a problem in Q63 in the 1960s and 1970s, requiring an inspection campaign, ploughout of diseased fields, restrictions on planting material and eventual disapproval of Q63. Monitoring the situation on infected farms prevented an outbreak developing in Q87. **Chlorotic streak** is endemic in the wetter and poorly drained areas, but use of inspected CS-free plants and improvements in drainage helped to reduce losses. **Fiji disease** loomed as a threat to the major variety NCo310 when it was discovered in Plane Creek in 1981.

As Fiji spread into Mackay area, inspections were increased and Board pressure was stepped up for phasing out NCo310. Fortunately, Fiji

was contained in Mackay area before it reached the border with Proserpine.

A new strain of **orange rust** appeared in 2000 in the dominant but highly susceptible Q124, causing serious yield losses. Large tonnages of healthy planting material of resistant varieties were arranged by the Board for use in an emergency replanting program to replace Q124. **Pachymetra root rot** emerged as a major issue in the early 2000s, just as Q124 was being replaced. Board surveys showed it was widespread and losses were occurring in susceptible varieties. It continues to be an important limiting factor. Other minor diseases requiring some Board input at times included **mosaic** and **pineapple disease**.

Productivity issues for Proserpine CPPB in the 1991–2002 period included:

- A BSES Productivity Officer was appointed in 1994, responsible to both BSES and the Productivity Board for various productivity issues as well as pest and disease control matters.

Board staff

Bob Robinson was the Board's first supervisor, from 1954 until retirement in the 1980s. He had to establish the concept of what was the job of the supervisor in the mind of growers. **Bill Gibson** succeeded Bob as supervisor and retired in the late 1990s. Both knew their area and growers well.

POSTSCRIPT

THE 2003–14 PERIOD AS A NON-STATUTORY BOARD

(provided by Peter Sutherland, Productivity Officer)

The Sugar Industry Act was amended in 2003 so that all statutory Productivity Boards were to be abolished by 30 June 2004, and hence lost the right to have statutory levies. The Minister could approve a suitable replacement entity for the Board, which would receive all its assets when it was abolished. Proserpine Mill and Canegrowers were consulted on the future of the Board. It was agreed that it would be replaced by **Sugar Services Proserpine**, a group to be supervised by representatives from the mill and Proserpine CANEGROWERS, and with the former Board assets held in a trust account at the mill.

Major items dealt with included:

- Arrangements were changed in 2006 when a Service Agreement was drawn up between Proserpine mill, Proserpine CANEGROWERS and BSES, under which BSES received an additional fee to provide all productivity and extension services. **Proserpine Productivity Committee**, composed of canegrower and mill representatives, supervised the operations. John Agnew now became the Senior Productivity Officer, but resigned in 2007 and was succeeded by Peter Sutherland.
- This arrangement worked satisfactorily until mill ownership changed and then BSES closed its Extension Advisory Service. **Sugar Services Proserpine Ltd (SSPL)**, a company limited by guarantee, was formed in 2013 as a partnership between CANEGROWERS and millowner Wilmar Sugar. It took over all productivity, plant protection and extension functions in Proserpine.
- Smut disease was discovered in South Queensland in mid-2006 and later in Mackay. The first smut in Proserpine was located in December 2007. Considerable effort went into inspections in Proserpine area to determine its extent and effect on susceptible varieties. A control program over several years provided adequate plants of resistant varieties, and accelerated the ploughout of infected ratoon crops. Highly susceptible varieties showed significant yield losses and were replaced as quickly as possible.
- Nutrient management planning was a key initiative during the period of high fertiliser prices, and the legislative changes re Reef protection that encompassed fertiliser application rates.
- In 2009, the first tissue culture plantlets were used in the clean seed program. Together with locally produced one-eye setts, they accounted for approximately 50% of the approved seed source material in 2014.
- The core business of SSPL consists of the clean approved seed program; weeds, pests and disease control; crop agronomy, irrigation and drainage; and extension services.

16.15 MACKAY

Collection of beetles in Mackay District began in the 1880s in a desultory fashion, in an attempt to control canegrubs. The first coordinated campaign commenced in the Nindaroo-Habana area in late 1894, under W.T. Paget's direction, when 7.5 tons of mainly greyback beetles were collected at a cost of £400. A much greater effort was made in the 1895–96 beetle flight season, with 16 tons of beetles (approx 9 million) purchased at 6^d per pound before the subscribed funds of £886 were exhausted. **Nindaroo, Habana, Farleigh and Homebush (CSR)** mills subsidised the voluntary subscriptions from their farmers, but all these groups apparently operated as separate units.

Mackay Insect Pest Destruction Fund was set up in late 1896 when the Government announced a subsidy scheme on voluntary subscriptions, and this required a central committee to be set up in each district. This Fund operated continuously from 1896 to its termination in 1924. **Homebush Mill Beetle Fund** operated in that CSR mill area from 1895–1913, and probably to 1921 when the mill closed, with CSR subsidising grower levies on a 1:2 basis. Other Funds probably existed for varying periods ((McDougal, 1938), as CSR Ann Rep 1907 notes grub and beetle purchases in 1907 at The Palms and Farleigh mills.

The statutory **Mackay Cane Pests Board** was one of the first three such Boards set up in April 1924 following the 1923 SES Act Amendment. Its first meeting was held on 21 May 1924, and its first funds came from a levy of 1.5^d per ton on the 1924 crush. It remained active until 1942. **Mackay Cane Disease Control Board** was one of six Disease Boards set up in February 1939. This followed the 1938 S.E.S. Act Amendment setting up such Boards, which had been advocated strongly by the Mackay and Bundaberg District Cane Growers Executives. The first meeting was held probably in April 1939. It operated in parallel with the Pests Board for three years until they were amalgamated on 1 April 1942 as the **Mackay Cane Pest and Disease Control Board**. It continued to operate until July 1991.

The Sugar Industry Act 1991 gave Boards additional powers to work and advise on productivity matters, and the Board was renamed **Mackay Cane Protection and Productivity Board**.

Much greater changes were to come from 2003 when the Sugar Industry Act was amended—the statutory Boards were abolished and lost

the right to raise funds by statutory levies. After consulting with millowner Mackay Sugar and Mackay CANEGROWERS, **Mackay Area Productivity Services (MAPS)** was registered on 25.3.04 as a company limited by guarantee, as the responsible entity to take over all assets of Mackay CPPBd when it was dissolved.

Work of the Boards

Mackay Insect Pest Destruction Fund bought over 20 tonnes of beetles in the 1896–97 season and about 10 tonnes in 1897–98, but very few in 1898–99 as populations had crashed. Numbers remained low until the 1907–08 season when active purchase of beetles recommenced. Operations of the Fund were described in an article in the Australian Sugar Journal in 1911 (ASJ 2:443), and a precis follows. Mackay canegrowers have an Insect Pest Destruction Fund, with mills deducting 1^d per ton to go into the Fund. This is subsidised at 10/- in the £ by government. The commonest method of control is to catch beetles, which are paid for at the rate of 6^d to 9^d per pound. Receivers are appointed by the Fund and currently pay 6^d per pound for beetles. The receiver gets ½^d per pound for this job, which includes destruction of the beetles by burning. £1,440 was paid out in the 1909/10 season for about 22 tons of beetles (say 12–13 million).

Homebush Fund bought beetles from 1895 to at least 1913, and details of purchases were given in CSR Ann Reps for 1907, 1908 and 1910–12, but not subsequently. McDougall (1938) noted at the 4th Annual CPDCB Conference that Mackay funds had collected and paid for beetles continuously over the 42 year period from 1896–1938. Records were poor, although in 1932 he had inspected old cash books of the voluntary funds previously functioning in Mackay. These had now been lost (McDougall, 1946). Little else is known about operations of the Funds, although some activity in the control of wallabies and rats was likely.

Mackay Cane Pests Board appointed collectors at each of the mills to receive and pay for beetles, grubs and wallaby scalps. By 1928, a subsidy of 50% of cost had been introduced for fumigants and the necessary applicators as part of the Board's endeavours to improve grub control. This later rose to 75% for fumigants while use of the Board's equipment was free. Few farmers would have undertaken fumigation if it had not been heavily subsidised. McDougall (1938) at the 4th Annual CPDCB Conference gave details of the Board's purchases from 1929 to

1937 of 96 tons of beetles and 7.3 tons of grubs, for a total of £11,000. Of these, 35 tons were bought in 1937 alone, and the Board subsequently considered it probably was not worthwhile. McDougall (1946) at the 8th Annual Conference provided data from 1930 to 1946 on grub damage, beetles collected and cost, and area fumigated and cost.

Full time field staff were not employed until the Disease Board was formed in 1939, when the two Boards shared the cost of a supervisor. However, it did organise and supervise fumigation of grubs for farmers, with 12 men known to be employed on this in early 1942.

Mackay Cane Disease Control Board's primary objective during its three years was to control **downy mildew** disease, which was spreading explosively in the new and very productive POJ varieties. Stan Greenaway was appointed Supervisor of both Boards, with half his salary and expenses paid by each. A concentrated campaign from 1939 to 1943 was very successful, eradicated downy mildew by October 1943, and saved the very productive POJ2878. Up to 29 men were employed on this, operating as inspection and roguing gangs of eight men plus a foreman.

Mackay Cane Pest and Disease Control Board (CPDCB) was an active one throughout its almost 50 years. **Dwarf** disease received attention as downy mildew diminished. However, it was the discovery of 'Q28 disease' in Mackay in 1943 which started the prolonged and intensive campaigns against what is now known as RSD.

RSD early research work was all done in Mackay by BSES pathologist Dave Steindl, and the Board provided much assistance in this and the work with hot water treatment as a curative. By 1953, large scale HWT was carried out by the Board at Pleystowe, Farleigh and North Eton Mills. Treatment time increased to three hours in 1955 and whole stalk treatment began to replace setts in 1959. The need for higher quality tanks and better automated temperature control saw a central 6 tonne capacity tank constructed at Pleystowe Mill in 1966.

This was the largest capacity in Australia, and provided the most efficient use of resources despite the longer transport hauls. A 21 ha farm at Victoria Plains was purchased in 1989 for greater production and distribution of clean seed to growers. In 1993, the Board paid for construction in Mackay of a second BSES Elisa laboratory, allowing for many more plant source samples to be tested. These extensive campaigns against RSD have resulted in very low infection percentages across the district.

Mosaic came into prominence in the mid 1950s, mainly due to the widespread Q50. Strong roguing and clean seed campaigns in the late 1950s and late 1960s greatly reduced the incidence of mosaic, but it was the replacement of Q50 by better varieties in the 1970s which ended the campaign.

Leaf scald became a problem when the susceptible Q63 became a significant variety in the 1960s. An inspection and roguing campaign, and restrictions on planting material, limited the problem for several years. Extensive death due to acute stage leaf scald appeared first in Pleystowe area in 1971, then elsewhere, and Q63 was disapproved from 1973. The Board was then involved in the orderly removal of Q63, and in protecting the less susceptible Q87 and Q96.

The **Fiji** disease threat to Mackay was confirmed when the first ever diseased stools were found in the Central District in March 1981 in Plane Creek area. Inspection levels were stepped up until Fiji was found in Racecourse area in December 1982, then increased further. By 1988, 153 farms were known to have cane infected, mainly in NCo310.

The Board was fully involved in the control campaign as part of a Fiji Consultative Committee which set policy; through the development of clean cane plots in the Nebo and Blue Mountain grazing areas to the west of Mackay, as well as within the cane area; and by extensive inspections to determine where Fiji was present. These control measures kept direct yield losses to a very low level.

Following progressive removal of NCo310 up to 1991, associated with compulsory ploughouts, the number of infected stools dropped dramatically. The last known Fiji disease in the Central District, in Q124, was recorded in 1993.

A new strain of **orange rust** suddenly infected susceptible varieties throughout Queensland in 2000. Mackay was worst affected as the highly susceptible Q124 was over 90% of the crop. An emergency Q124 replacement program was promoted—over 600 tonnes of plants of resistant varieties were obtained from the Herbert and Burdekin, and clean plants sources within the area were identified.

Canegrub control work continued as before until the advent of BHC in 1948. The Board then hired out application equipment for some years, and subsidised BHC to the extent of 40% of cost from 1948 to 1959. **Greyback** grub damage virtually disappeared by the late 1960s, but was replaced by **Frenchi** grub damage as better varieties allowed more ratoons to be grown.

The Board began bulk purchasing BHC and distributed it from local sidings to farms using Board vehicles and staff. By the mid-1970s, up to 600 tonnes were handled annually. Everyone was glad when suSCon replaced BHC! However, it began to fail in some circumstances in the 1990s and newer insecticides had to be introduced to growers.

Soldier fly became a major pest in the 1960s and 1970s, and Board staff were involved in inspections and recommending control measures. Dieldrin became the only recommended chemical in 1966, and the Board began bulk purchasing from formulators. Resale to growers at substantial cost saving, and a subsidy of 15% of cost for many years, continued into the 1980s. After dieldrin use was banned in the late 1980s, soldier flies became a serious pest in the Upper Pioneer Valley, and still are. In the late 1990s, the Board paid for a BSES technician for four years in an attempt to find a suitable control method.

Rats have always been a problem but rat baits were always available. However, 2001 saw very high rat numbers and no chemical control measures now available. Board staff put in a lot of time gathering registration data for Ratoff, then ran rodent accreditation workshops so growers could use it under permit.

Feral pigs became a greater problem in the late 1990s, and a pig trap subsidy of 50% of cost was introduced. In a first for Queensland, grower accreditation for farms adjoining national parks and other State lands was negotiated, allowing them to **control pigs on these lands**. **Other cane pests including wireworms, rhyparida, locusts and armyworms** also have been dealt with at times. Mackay Board and staff always prided themselves on having a good knowledge of local pest and disease problems, and have maintained an excellent rapport with the canegrowing community, with few major disputes.

Canegrowers appreciated the fast response to requests for service, and the quality of information and services provided. Moves for greater autonomy in decision making did not always take account of the reality of a Board's position under the SES Act, resulting in friction with BSES at times.

Productivity issues for Mackay CPPB in the 1991–2003 period included:

- Signing of a new variety distribution agreement with BSES in 2000, using the Victoria Plains farm and leased land in Calen and Finch Hatton.

- In 2002 the Board committed to a closer working relationship with BSES, and paid for addition of a new wing on the BSES office to house Board staff.

Board staff and members

Stan Greenaway was Supervisor for over 30 years, from 1939 to 1971. He was responsible for the successful downy mildew disease eradication campaign, introduced the individual farm recording system which allowed trace back of varieties, diseases, etc, and set up the sections within the Board area which gave staff direct responsibility for services to their particular growers. He maintained good relationships with Board members, growers and staff, and had a good rapport with BSES researchers in assisting them with trial work. He jealously guarded the Board's reputation and independence, the latter often resulting in friction with local BSES staff when the degree of this independence was called into question by both sides.

Peter Amiet became Supervisor in 1971, following four years as assistant, and retired in 2001. He initially developed a better working relationship with BSES staff; introduced mechanical handling of bulk insecticides and HWT cane; revised, simplified and then computerised farm data recording; improved staff training and increased mobility (4WDs, 2-ways, mobiles); played an important part in the leaf scald and Fiji control campaigns; and oversaw the changes required by the addition of productivity functions.

Allan Royal joined the Board in 1996 as Productivity Officer, tasked with transitioning Board activities from solely pest and disease matters to encompass all productivity-related matters. He was responsible for moulding Mackay CPPB & later MAPS into a respected unit of the sugar industry. He became Manager in 2001 on Peter's retirement, and is now the Senior Extension Agronomist at MAPS.

Many inspectors worked for the Board, but a few characters who worked for long periods became well known and liked, eg **Ron Walters**(1941–71) was probably the most proficient field inspector for pests and diseases, while **Harry Sander** (1953–75) had an excellent relationship and control over his growers and trained many of the cadet inspectors during the 1960s and 1970s.

Mick Mackenzie has serviced the area well since 1969 and holds the respect of Mackay growers to this day. **Andrew Dougan** commenced in 1980 and continues to serve Racecourse area. Mick and Andrew are

two of the most proficient pest and disease advisers in our industry, and also served as manager of the 21 ha Victoria Plains clean seed plot.

John Fordyce was Board member from 1960 and Chairman from 1969–91. He championed the Board’s role in the Mackay sugar industry, presided over many dramas and changes within the Board, argued for reasonable autonomy for Boards, yet maintained a close and effective working relationship with all sectors. He was always available to discuss problems and assist staff.

Mattie O’Neill, without doubt, was the greatest character on Mackay Board and at other meetings. He was a member in 1956–60 and 1969–84, spoke plainly and to the point without alienating his audience, but was best known for his capacity for alcohol and the ability to spin endless yarns.

Other chairmen of the Board or of MAPS have been Lex Hamilton (April 1993–March 2004). Andrew Barfield (March 2004–Sept 2007) and Lawrence Bugeja (Oct 2007–Feb 2014).

POSTSCRIPT

THE 2002–14 PERIOD FOR MAPS AS A NON-STATUTORY BODY

(provided by Allan Royal, Senior Extension Agronomist, MAPS)

The Board’s statutory base was lost after amendment of the Sugar Industry Act. It was decided, with CANEGROWERS and Mackay Sugar support, to incorporate as the public company **Mackay Area Productivity Services(MAPS)** on 25.3.2004, with then current Board members as Directors and all growers as members. **Burn Ashburner** commenced as General Manager in August 2004, resigning in February 2013 to go to CANEGROWERS in Brisbane. **Rob Eccles** succeeded him as CEO, and brought a wealth of soil health and soil science knowledge from other cropping backgrounds.

- Allan Royal continued to work with government and Canegrowers staff since 2002 to secure a better scheme for rat control permits. After 10 years, a Native Rodent Management Plan was agreed which allows for rat control without the need for individual permits. This is a first for the agricultural community in Australia, the only other one being for airports.

- Sugar prices were very low in 2003/4 and many growers suffered badly. MAPS ran a series of workshops in a bid to assist growers to get through these difficult times. Staff also attended Lifeline counselling courses to be better prepared to assist growers in times of stress and depression.
- Smut disease was found by a grower in 2006, and was soon identified by staff in susceptible varieties throughout the area. MAPS instigated the import of plants of resistant varieties from other districts, and hundreds of tonnes were trucked in for planting. Growers deserve credit for the urgency with which they tackled the problem, and the short time in which they replaced susceptible varieties on their farms, thus limiting yield losses.
- In 2009, Burn Ashburner was the driving force in setting up a partnership with BSES to form AGRISERV, a combination of MAPS and BSES Mackay extension staff. John Agnew joined MAPS in 2009 as Senior Extension Officer to assist in providing a higher level of service to Mackay growers.
- In 2011, government set up the Reef Regulations and Reef Rescue package. Staff and BSES ran grower accreditation workshops to allow growers to meet the regulation requirements. Maps also employed another 3 staff to assist growers and process documentation for funding from Reef Rescue resources.
- AGRISERV continued until 2013 when the BSES Extension Advisory Service was discontinued. Consequently, MAPS now has to resource, undertake and deliver all productivity initiatives in Mackay area including the direct advice to growers formerly provided by BSES.

16.16 PLANE CREEK

Little is known of the early history of pest control in the area. We do know that the manager of CSR's Homebush Mill advised that much larger quantities of beetles were collected in Plane Creek, and were more numerous, than in the adjacent Homebush mill area from the 1890s onward (CSR Ann Rep, 1907).

Plane Creek Insect Pest Destruction Fund was operating before 1922, since it received Government subsidy in that year (Table 10.3). We can infer that this or an earlier version of the Fund existed in the 1890s and certainly well before 1907. It ceased operations in 1924.

The statutory **Plane Creek Cane Pests Board** was constituted on 5 April 1924 as one of the first three such Boards. It began operations in May 1924 and operated until 1942. A Disease Control Board was never formed in the area. **Plane Creek Cane Pest and Disease Control Board** began operations on 1 April 1942 when all existing Boards were converted to joint operations, and continued up to July 1991. It was renamed **Plane Creek Cane Protection and Productivity Board (CPPB)** in July 1991 after Boards were granted additional powers to work and advise on all productivity matters.

A far greater change occurred in 2003 when some sections of the Sugar Industry Act were amended—statutory Boards were to be abolished by 30 June 2004 so the right to raise funds by statutory levies was lost. After consultation between mill owner CSR Ltd, Plane Creek Canegrowers and the Board, a new company limited by guarantee, **Plane Creek Productivity Services Ltd (PCPSL)**, would be formed to take over all assets of the Board. **Plane Creek CPP Board was dissolved in 2003** and replaced by PCPSL.

Work of the Boards

There is no other information available on the Fund or its operations, but beetles were purchased 'for many years' prior to severe grub damage in 1927–28 (comment at 1940 Pest Board Conference). The **Pests Board** bought beetles from 1924 to 1939 (comments at 1936 and 1940 Pest Board Conferences) and probably to 1942. It also would have promoted fumigation for grub control, and we know that it paid for wallaby scalps on a continuing basis. Unfortunately, all Pests Board and some CPDC Board records into the 1960s had been moved out of storage and were accidentally destroyed.

Greyback grubs continued to be the major problem in Plane Creek area through to when the CPDC Board was set up in 1942. Payment for beetles and subsidy for fumigants continued until the advent of BHC in 1948 and subsequent good control of grubs. A lot of time was spent on advice to growers on correct application methods and problems experienced.

Greyback damage virtually disappeared but was replaced by Frenchi grub damage in some areas as better varieties allowed older ratoons to be grown. When all organochlorine insecticides were banned in the 1980s, suSCon Blue controlled release insecticide was introduced and a new placement technique required more grower education. Unfortunately suSCon began to fail in some circumstances in the 1990s, and growers were assisted to use newer insecticides as they became available.

Rats were a recurring problem. Rat baits were provide by the Board, and aerial baiting campaigns were organised as required. When thallium was withdrawn, newer rodenticides were introduced and it became necessary to negotiate permits to kill these native rat pests. Staff assisted growers by monitoring and reporting on rat population levels. Other cane pests that have been a minor problem at times include **soldier flies, wireworms, rhyparida, locusts and feral pigs.**

RSD control was a major focus for the Board from 1953 when a small HWT tank was built at the mill, but germinations were variable and a small percentage of setts were not cured of RSD. It needed upgrading in size and quality of equipment, until a much larger and more efficient unit was constructed.

Grower education programs resulted in better understanding of the need for good hygiene to prevent spread, and treating or buying clean seed each year. Clean seed plots were established by the Board at several locations, and the importance of having plant source inspections was stressed. Through the 1960s to 1980s, drought stress showed up yield losses in infected fields, and use of approved or inspected plant sources improved greatly. A high level of control is achieved currently.

Fiji disease had never occurred north of Bundaberg area, but by the mid-1970s its spread by leafhopper from Bundaberg to the Mackay region was predicted. Inspection levels were increased by the Board, mainly in Carmila and further south. The first Fiji stools were located in March 1981, and more locations were found further north and into the Sarina area over the next year and a half.

When the first Fiji was found by Mackay Board in December 1982 at Racecourse, it was obvious that a major epidemic would develop unless strong control measures were adopted. The Board was involved in the control campaign as part of the Mackay Fiji Consultative Committee which set policy. Clean cane mother plots and secondary increase plots were set up in grazing areas west of Mackay, and in western Plane Creek area. Compulsory ploughouts of diseased blocks, restrictions on planting NCo310, and accelerated removal of NCo310 as an approved variety kept direct yield losses to a very low level. The campaign was successful and no Fiji-diseased stools have been seen in the whole Mackay district since 1993.

Leaf scald disease became a problem in Q63 in the 1960s and 1970s, requiring inspections, destruction of diseased fields, restrictions on plant sources and disapproval of Q63. This further emphasised the need for good hygiene and use of clean seed sources, already stressed in the RSD campaign. A new strain of **orange rust** appeared in 2000 and caused serious yield losses in the dominant but highly susceptible Q124.

Large tonnages of healthy planting material of resistant varieties had to be arranged by the Board in an emergency rapid replanting program. **Pachymetra root rot** was a problem in some areas from the 1990s, and advice was given to affected farms on soil samples to assess infection levels and use of more resistant varieties. **Downy mildew** disease caused problems in the POJ varieties in the 1940s, but was quickly controlled by the Board. **Mosaic** was a minor problem in Q50 in the 1950s and 1960s.

Board staff

Eric Cran was the long-serving supervisor who located the first Fiji diseased stools in the district in March 1981, and participated in much of the subsequent control campaign.

POSTSCRIPT

When Plane Creek CPPB was to be abolished after amendment of certain sections of the Sugar Industry Act in 2003, the mill owner CSR Ltd and Plane Creek Canegrowers were consulted on the Board's future structure. It was agreed that a non-statutory corporate body should be set up. Consequently, **Plane Creek Productivity Services Ltd (PCPSL)**, a company limited by guarantee, was registered and took over all assets of

Plane Creek CPPB when it was dissolved in 2003. PCPSL has continued to operate successfully to the present (2014) and now provides all productivity, pest and disease control, advisory and extension services to Plane Creek canegrowers.

16.17 BUNDABERG

Cane grubs caused serious problems in parts of the Bundaberg area in the 1890s, with the Woongarra area worst affected. In mid-1897, the various Farmers Associations in Bundaberg resolved that a central body, a Canegrowers Union, be formed, funded by a levy on all cane sent to the mills. Fund objects included payment and grants towards eradicating the grub and other pests. No other information could be found on the proposal and perhaps it came to nothing.

Although gumming disease caused major problems from the mid-1920s to early 1930s, it was not until Fiji and downy mildew diseases caused major problems in the late 1930s that demands for control measures became urgent. In mid-1938, Bundaberg District Cane Growers Executive lobbied strongly for the introduction of statutory Disease Boards. The

Bundaberg Cane Disease Control Board was constituted in early 1939, following the SES Act Amendment of October 1938 which introduced these Boards, and operated until 1942. **Bundaberg Cane Pest and Disease Control Board** began operations on 1 April 1942 following the decision to convert all Boards to joint operations. The Board was **abolished on 30 November 1972** in the early stages of the big Fiji disease epidemic, and split into three Boards: Bingera-Gin Gin, Fairymead and Millaquin-Qunaba.

NB: The Sugar Industry Act was amended in 2003, with all statutory Productivity Boards to be abolished on 30 June 2004 if they had not been privatised prior to that. The sugar industry in Bundaberg decided that a single corporate body, **Bundaberg Sugar Services Ltd**, should be set up for the whole district rather than continue with 3 separate bodies. A Postscript to this history of Bundaberg Board provides further details on this development.

Work of the Board

Pending the official establishment of the Board, the Bundaberg District Executive appointed two inspectors in 1938 to assist BSES staff in the control campaign against downy mildew disease. Three more inspectors were appointed later, and even though a large number of diseased stools were dug out, a much greater effort was needed. These men formed the basis of the new Board's inspection and roguing gangs under supervisor Norm Courtice. Fiji disease was increasing also, so there were two major diseases to control in the productive but susceptible POJ varieties. Large areas were inspected—31,000 acres (1939), 51,000 acres (1940) and 35,000 acres (1941)—before wartime labour shortages reduced this greatly until the campaign was reactivated in 1946. Compulsory ploughouts, roguing and care with planting material reduced the diseases greatly, but it was eliminating the susceptible POJ and other varieties which ended the epidemics.

At the peak of the **downy mildew** epidemic in 1940, 13,235 diseased stools were rogued. There were still 5,270 stools rogued in 1946, but the last diseased stools were rogued or ploughed out in 1950. **Fiji** diseased stools rogued varied from 3,400 to 8,100 over the 1939–46 period but many more were eliminated in compulsory ploughouts. By 1950 the problem was over but small numbers of diseased stools continued to be found to the mid 1950s. Unfortunately, these were to be the nucleus of the great Fiji epidemic of the 1970s and 1980s.

RSD control became a major concern of the Board from the mid-1950s. As well as individual heat treatment and plant source inspections, it promoted the use of clean seed schemes on a wide scale. Unfortunately, some plots in the early 1960s were in localities which subsequently were found to have very light levels of Fiji disease, and probably helped to spread the disease. It was not until the Clean Seed Schemes for Fiji control became fully operational that RSD control reached a high level again.

Canegrub control became an important Board project with the arrival of BHC in the early 1950s, and continued to require effort through the 1960s. **Soldier fly** became a major pest problem involving the Board from the mid-1950s through the 1960s and into the 1970s, identifying infested blocks, advising growers on control measures and cooperating with BSES in trials.

Fiji disease became a problem again in the major variety NCo310 in the late 1960s, but the Board and BSES believed that it could be

controlled by the methods used in the 1940s for POJ2878. By early 1972 it was obvious that a major epidemic was developing and current methods could not control it. The major difference was that NCo310 was a favoured host for the leafhopper vector even on diseased stools, which built up to enormous populations of millions per acre over summer, and produced huge swarms of insects which flew or were carried by winds over big distances. Inspections were stepped up and a large load of RSD- and Fiji-free NCo310 was brought from Mackay area to set up the Toweran Clean Seed Mother Plot in grazing areas well north of Gin Gin.

By mid-year however, personal differences and opinion differences between Mill Suppliers' Committees resulted in requests for changes, initially that Bundaberg Board membership be expanded; and then that the Board be split into three 'for the more efficient control of Fiji disease'. This was certainly one option, but in the author's opinion, a single district Board would have done at least as good a job.

Bundaberg Board was abolished by the Minister in November 1972. The Bingera-Gin Gin, Fairymead and Millaquin-Qunaba Boards were constituted, elections for grower members were called, and the new Boards became operative from 1 April 1973.

During that intervening period, an advisory group of previous and prospective Board members helped the Administrator (Bundaberg District Canegrowers' Secretary) and BSES pathologist Brian Egan to run the operations. A very large inspection program was carried out, with over 50 men employed at the peak, and this revealed an even worse disease position than almost everyone believed possible.

Bundaberg Board was set up in 1939 to control a burgeoning Fiji and downy mildew epidemic, and was abolished 33 years later as the great southern Queensland Fiji epidemic was set to explode.

Board staff and members

Norm Courtice was the first supervisor in 1939 and served for 32 years until retirement in 1971. He was tireless in the first Fiji and downy mildew control program of the 1940s and early 1950s, and was still doing his share of walking in the 1960s when Fiji reappeared in force before he could retire. **Ken Corrie** joined the Board in 1970 as Assistant Supervisor, becoming supervisor in 1971. He had an increasingly heavy responsibility for directing inspections, ending up with over 50 men in early 1973 just before the three new Boards became operational. He then moved to Millaquin-Qunaba Board as supervisor.

Fred Courtice was Chairman for 14 years (1942–1956) and led the Board well through the difficult control campaign of the 1940s. **Ben Anderson** was a member for 20 years (1952–1972) and Chairman for the last 16 years. He was the face and voice of Bundaberg growers and was always a force at meetings. **Ned Churchward** served a long apprenticeship on the Board (1957–1972), including 14 years as Deputy Chairman, and became Fairymead Chairman after the split up. He took a keen interest in all Board activities.

POSTSCRIPT 2004

THE 3 BOARDS ARE AMALGAMATED INTO A SINGLE ENTITY - BUNDABERG SUGAR SERVICES LTD - TO PROVIDE PEST & DISEASE CONTROL AND PRODUCTIVITY FUNCTIONS FOR THE WHOLE AREA

BUNDABERG SUGAR SERVICES ACTIVITIES

IN THE 2004–14 PERIOD

In 1999, all CPPBs were advised by Government that the number of statutory Boards would be reduced in due course, which happened in 2003 with amendments to the Sugar Industry Act. Any Board willing to relinquish its status earlier would be assisted to do so. Initially, Bundaberg Sugar Services was formed on 1 April 2002 as a partnership between the 3 Boards, after discussions with BSES. A Memorandum of Understanding was signed with the extension arm of BSES for all Productivity Board and BSES extension services to be provided jointly by this group, and a co-ordinator was appointed to manage the daily operations.

After further consultation between millowner Bundaberg Sugar, all CANEGROWER groups and the Board, and backed by a meeting of growers, it was agreed that a single non-statutory corporate body would be set up for the whole Bundaberg district, rather than continue on with three separate bodies. Consequently, **Bundaberg Sugar Services Ltd (BSSL)**, a company limited by guarantee, was registered and took over all assets of the Bingera, Fairymead and Millaquin CPP Boards when they were dissolved in early 2004.

Major items dealt with by BSSL included:

- BSSL was **co-located with BSES** from the earlier arrangement, which resulted in good cooperation with BSES extension staff, and facilitated BSSL taking over

extension and advisory services from BSES when it closed its Extension Advisory Service in 2012.

- BSSL currently has 2 full-time **staff** who have been with it since 2004. Michael Turner is the field officer for pests and diseases, and formerly a Millaquin CPPB inspector and supervisor for many years. Maurie Haines is a former Bingera grower who commenced work in 1993 with Millaquin CPPB as Productivity Officer, and is currently involved mainly on more efficient use of irrigation water.
- **Smut disease** was discovered in Isis in June 2006, and soon found in Bundaberg. Inspections were increased to discover the extent of smut occurrence and reaction of major varieties. Stocks of resistant varieties were imported from Central and North Queensland for an accelerated replanting program. A Variety Replacement Program was put in place to remove all susceptible varieties over a 5-year period, and this helped to limit tonnage and financial losses due to smut.
- **Soldier flies** are a problem for quite a few growers, but there is no insecticidal control available. Regular surveys check the extent of the problem, and variety trials in infested blocks are looking for resistant varieties.
- **Pachymetra root rot** is becoming an important problem in all soil types. Surveys every few years check spore levels in soil, with resistant varieties recommended for planting in blocks with high spore levels.
- Two **nutrient management surveys** have been conducted since 2007/8 across the district, with further surveys scheduled.
- Eight **weather stations** have been installed geographically across the district to measure rainfall, wind and temperature to assist growers with irrigation scheduling, wind speed for spraying, and ground temperature for planting. These are linked to a website for grower access.
- Twenty five **soil monitoring probes** have been installed across all soil types in the district, some owned by BSSL, some by growers or Bundaberg Sugar. These are all linked to the website also.

- BSSL's **Integrated Weed Management Program** was launched in 2013/14 and has been a useful tool for growers.
- The loss of the BSES Extension Service in 2012 loaded more responsibility onto BSSL and its staff, but it further justified the decision made in 2004 to opt for the formation of an independent company.

16.18 BINGERA

The breakup of Bundaberg Board in 1972 was precipitated by the great Fiji disease epidemic, and resulted in the formation of a Board for the Bingera and Gin Gin mill areas. **Bingera-Gin Gin Cane Pest and Disease Control Board** was constituted on 30 November 1972 and came into full operation on 1 April 1973. The name was shortened to **Bingera CPDCB** in 1975 with the closing of Gin Gin mill and integration of the two mill areas. It continued to operate up to July 1991. The name was changed again in 1991 to **Bingera Cane Protection and Productivity Board**, when Boards were given additional powers under the Sugar Industry Act 1991 to work and advise on all aspects of cane productivity.

Much greater change was to come in 2003 when some sections of the Sugar Industry Act itself were repealed—statutory boards were abolished as was the right to raise funds by statutory levies. However, Boards were advised in late 1999 of the forthcoming changes, which they could make earlier than 2003 if they wished.

Millowner Bundaberg Sugar, all Canegrower groups in Bundaberg area and the growers were consulted on a future structure for the three Productivity Boards. It was agreed that a single corporate body should be set up for the whole Bundaberg district rather than continue on with three separate bodies. Consequently, **Bingera CPPB was dissolved in early 2004** (as were Fairymead and Millaquin Boards), and replaced by **Bundaberg Sugar Services Ltd (BSSL)**, a company limited by guarantee.

Further information on BSSL and matters of importance for the whole Bundaberg area for the 2004–2014 period are provided at the end of section 16.17 Bundaberg.

Work of the Board

An overall but sketchy picture of the **Fiji Disease** situation in Bundaberg was just being obtained when the Board commenced operations in April 1973. The worst affected areas were in and around Gooburrum in Fairymead, and included the adjoining eastern-most areas of Bingera around Splitters Creek. The immediate requirement was to better determine the extent and incidence of **Fiji disease** in the area, using two inspection gangs totalling 12 men—the results were startling and helped set future policy.

Although 125 farms were now known to have Fiji disease in Bingera mill area, only six farms with the disease were located in Gin Gin mill area. Quite low infection levels were found in the outer areas beyond Bingera mill and in Gin Gin, but disturbing rapid increases in disease levels had occurred in eastern Bingera.

At this early stage, it was hoped to limit the spread of infection and retain NCo310 for a longer period by introducing an Approved Plant Sources Scheme.

This was accelerated, with the Board running the Mother Plots and Mill Suppliers' Committees running several Secondary Increase Plots (SIPs) in outer grazing areas to provide large tonnages of healthy NCo310 planting material for 1974 and future years. Considerable inspection effort also went into locating 'probably clean' NCo310 plant sources in central and far western areas for the 1973 and 1974 seasons, as many growers would be unable to use their own plants.

An intensive program of inspections, roging and compulsory ploughout of diseased blocks was in operation until 1974. This was phased down as there were no real benefits, but was continued in the western areas of Bingera and Gin Gin where there was very light infection. Some inspections were continued to identify how the epidemic was developing, to provide advice to growers on heavily diseased blocks which should be ploughed out, and to insure the MP/SIP plots contained no disease. The numbers of inspectors were reduced, allowing for levies to be slowly reduced from the high levels in force since 1973.

In early 1976, BSES introduced a comprehensive annual survey of disease levels throughout Bundaberg, to assist in prediction of future disease levels and provide a sound basis for control recommendations. In conjunction with Board members and staff, Bingera area was divided into 12 defined localities, and 10% of representative farms in each were

selected for monitoring by our inspectors in accordance with set criteria. Data from inspections made in 1973–75 were also entered in the database. Inspections continued up to 1981, by which time the only significant area of NCo310 in Bundaberg was in central and western Bingera.

Similar monitoring inspections were made in Fairymead and Millaquin(10 localities each). The data provided by Board inspectors were vital in the campaign, validating predictions for rapidly escalating disease levels and heavy future yield losses in NCo310, and the removal of NCo310 as an approved variety as soon as possible. It also demonstrated the overwhelming influence of the original Gooburrum/east Bingera “oven area” in spreading Fiji throughout Bundaberg and beyond, as it sent out a wave of increasingly higher infection levels into all mill areas.

Resistant varieties were identified in the 1974–77 period, were multiplied as quickly as possible in the MP/SIP system, and the first major farm plantings were made with Q87 in 1977, CP44-101 in 1978, and Q108 to Q111 in 1980. Q87 and CP44-101 planting material had to continue coming from SIPs until Fiji levels were very low. However, the very resistant (but not immune) Q108-111 could safely be propagated on-farm for a year once infection levels dropped sufficiently—this helped to increase their popularity and rapidly decrease the area of NCo310.

Bingera Board sought a scheme where a small amount of cane was bought by each grower each year and multiplied under Board supervision. This became known as the ‘kilogram scheme’, and still operated successfully through the 1990s using the isolated Mother Plots.

This allowed the SIPs to be phased out. Inspection of planting material continued to be a priority issue for the Board. The whole scheme resulted in good control of RSD and other diseases, as well as its original purpose of controlling Fiji disease.

More information on this Fiji epidemic and work done on it by Boards can be found in Chapter 15 – Pest and Disease Control Work by Boards. Fiji disease was under complete control by 1991, and the last known stool was seen in the late 1990s.

More resources could be diverted into other matters as Fiji disease slowly came under control. **Soldier fly** had been a problem for some growers for many years, but had been adequately controlled until dieldrin was banned in the 1980s.

Cane grubs, **RSD** and a minor **mosaic** problem received greater attention during annual surveys and grower interviews for collation of planting details and pest data. A new strain of **orange rust** suddenly infected the productive but highly susceptible Q124 in 2000, causing heavy yield losses. An emergency replacement program was promoted, requiring clean seed supplies of resistant varieties. Formation of grower cell groups, shed meetings and bus tours helped to keep growers abreast of the latest technology. The Board also worked with the local Productivity Committee to improve farm and mill area production, even before this became part of its brief in 1991.

Board Staff and Members

Stan McGarry was supervisor from 1973 to 1984, a period of intense activity for him as the epidemic spread into the outer limits of the mill area. As Fiji was controlled, Board work began to increase on other pests and diseases. **Roy Sinnamon** was in charge of one of the inspection gangs from 1973, and became supervisor after McGarry's retirement in 1984, continuing into the 1990s. It was his task to carry out the major change in Board operations which occurred when Fiji disease was brought under control.

Stan Toft had served on Bundaberg Board for six years, and was elected Chairman of it only eight months before it was abolished. He became the inaugural Chairman of Bingera Board, serving for 8 years. He was the main driving force in the Bingera-Gin Gin control program, and one of the three major players in the Bundaberg District Fiji advisory group set up by BSES.

16.19 FAIRYMEAD

The breakup of Bundaberg Board in 1972 was precipitated by the great Fiji disease epidemic, resulting in the formation of a Board for the Fairymeade mill area. **Fairymeade Cane Pest and Disease Control Board** was constituted on 30 November 1972, came into full operation on 1 April 1973, and continued to operate until July 1991. It was renamed in 1991 as **Fairymeade Cane Protection and Productivity Board**, when Boards were given additional powers under the Sugar Industry Act 1991 to work and advise on all aspects of cane productivity.

Much greater change was to come in 2003 when some sections of the Sugar Industry Act itself were amended—statutory boards were to be abolished by June 2004, as was the right to raise funds by statutory levies. However, Boards were advised in late 1999 of the forthcoming changes, which they could make earlier than 2003 if they wished. Millowner Bundaberg Sugar, all Canegrower groups in Bundaberg area and growers were consulted on a future structure for the three Productivity Boards. It was agreed that a single corporate body should be set up for the whole Bundaberg district rather than continue on with three separate bodies. Consequently, **Fairymead CPPB was dissolved in early 2004** (as were Bingera and Millaquin Boards), and replaced by **Bundaberg Sugar Services Ltd (BSSL)**, a company limited by guarantee.

Further information on BSSL and matters of importance for the whole Bundaberg area for the 2004–2014 period, are provided at the end of section 16.17 Bundaberg.

Work of the Board

From inspections made for **Fiji disease** in the whole Bundaberg area on the young 1973 crop, the Fairymead Board knew that its area had a high number of known infected farms, while Gooburrum area had by far the heaviest infection levels in NCo310 ratoons in the district. The immediate requirements were to:— further define the extent and incidence of Fiji disease in the whole mill area; ensure planting material for the autumn and spring plant came from the safest sources available; and set up the Clean Seed Scheme using Toweran Mother Plot cane.

Inspection results up to mid-1974 were startling. Fiji disease was found on at least 190 Fairymead farms although the far northern sector beyond the Kolan R appeared relatively healthy, and could be used for a year or two to supply relatively healthy planting material. The epicentre of the Fiji epidemic in Bundaberg was confirmed as Gooburrum locality in the south-west of Fairymead area, plus a smaller adjacent area in Bingera, with some heavily infected NCo310 ratoons already present. This soon became known as the “hot spot” or “oven area” which continued to spread rapidly in all directions each year, while disease incidence in ratoons escalated greatly.

At this early stage, it was still hoped to limit the spread of infection and retain NCo310 for a longer period by introducing an Approved Plant Sources Scheme.

This was accelerated, with the Board running the Mother Plots and Mill Suppliers' Committees running several Secondary Increase Plots (SIPs) in outer grazing areas to provide large tonnages of healthy NCo310 planting material for 1974 and future years. Considerable inspection effort also went into locating 'probably clean' NCo310 plant sources in the far northern areas beyond the Kolan River and near Bucca for the 1973 and 1974 seasons, as many growers would be unable to use their own plants.

An intensive program of inspections, roguing and compulsory ploughout of diseased blocks was in operation until 1974. This was phased down as there were no real benefits, but was continued in the far northern areas where there was very light infection. Some inspections were continued to identify how the epidemic was developing, to provide advice to growers on heavily diseased blocks which should be ploughed out, and to insure the MP/SIP plots contained no disease. The numbers of inspectors were reduced, allowing for levies to be slowly reduced from the high levels in force since 1973.

In early 1976, BSES introduced a comprehensive annual survey of disease levels throughout Bundaberg, to assist in prediction of future disease levels and provide a sound basis for control recommendations. In conjunction with Board members and staff, Fairymead area was divided into 10 defined localities, and 10% of representative farms in each were selected for monitoring by our inspectors in accordance with set criteria. Data from inspections made in 1973–75 were also entered in the database. Inspections continued up to 1981, by which time NCo310 constituted only 1.5% of the Fairymead crop.

Similar monitoring inspections were made in Bingera(12 localities) and Millaquin(10). The data provided by Board inspectors were vital in the campaign, validating predictions for rapidly escalating disease levels and heavy future yield losses in NCo310, and the removal of NCo310 as an approved variety as soon as possible. It also demonstrated the overwhelming influence of the original Gooburrum "oven" area in spreading Fiji throughout Bundaberg and beyond, as it sent out waves of increasingly higher infection levels into all mill areas. In Fairymead, by 1976 the edge of the oven area moved past the mill to the east, reached the Kolan R to the north, and crossed the Burnett R deeply into Millaquin in the south, while NCo310 1R and 2R in the original epicentre area had 25–50% infection and heavy yield losses started to occur. By 1979, all NCo310 had been removed from a large

area surrounding the original oven area. By 1980, very little NCo310 remained in Fairymead mill area.

Resistant varieties were identified in the 1974–77 period, were multiplied as quickly as possible in the MP/SIP system, and the first major farm plantings were made with Q87 in 1977, CP44-101 in 1978, and Q108 to Q111 in 1980. Q87 and CP44-101 planting material had to continue coming from SIPs until Fiji levels were very low. However, the very resistant (but not immune) Q108-111 could safely be propagated on-farm for a year once infection levels dropped sufficiently. This helped to increase their popularity and rapidly decrease the area of NCo310. The Board pushed for a scheme where a small amount of cane was bought by each grower each year and multiplied under Board supervision. This became known as the ‘kilogram scheme’, and still operated successfully through the 1990s using isolated Mother Plots. This allowed the SIPs to be phased out. Inspection of planting material continued to be a priority issue for the Board. The whole scheme resulted in good control of RSD and other diseases, as well as its original purpose of controlling Fiji disease.

More information on this Fiji epidemic and work done on it by Boards can be found in Chapter 15: Pest and Disease Control Work by Boards. Fiji disease was under complete control by 1991, and the last known stool was seen in the late 1990s.

More resources could be diverted into other matters as Fiji disease slowly came under control. **Soldier fly** had been a problem for some growers for many years, but had been adequately controlled until dieldrin was banned in the 1980s. **Cane grubs**, **RSD** and a minor **mosaic** problem received greater attention during annual surveys and grower interviews for collation of planting details and pest data. A new strain of **orange rust** suddenly infected the productive but highly susceptible Q124 in 2000, causing heavy yield losses. An emergency replacement program was promoted, requiring clean seed supplies of resistant varieties. Formation of grower cell groups, shed meetings and bus tours helped to keep growers abreast of the latest technology. The Board also worked with the local Productivity Committee to improve farm and mill area production, even before this became part of its brief in 1991.

Board staff and members

Gerry Turner was supervisor for six years from 1973 to 1979, the worst years of the epidemic. He had a huge problem to manage, and

an enquiring mind so he contributed in various ways to the control program, including the theory behind it. **Keith Townson** was supervisor for nine years from 1982 through 1991, as Fiji was controlled and other pest and disease work increased.

Ned Churchward served 15 years on Bundaberg Board, 14 of them as Deputy Chairman, and became Chairman of the new Board for another 17 years until 1990. He was the main driving force in the Fairymead Fiji control program, and one of the three major players in the Bundaberg District Fiji Advisory Group set up by BSES.

16.20 MILLAQUIN

The breakup of Bundaberg Board in 1972 was precipitated by the great Fiji disease epidemic, and resulted in the formation of a Board for the Millaquin and Qunaba mill areas. **Millaquin-Qunaba Cane Pest and Disease Control Board** was constituted on 30 November 1972 and came into full operation on 1 April 1973. The name was shortened to **Millaquin CPDCB** later in the 1970s with the closing of Qunaba mill and integration of the two mill areas. It continued to operate up to July 1991. The name was changed again in 1991 to **Millaquin Cane Protection and Productivity Board**, when Boards were given additional powers under the Sugar Industry Act 1991 to work and advise on all aspects of cane productivity.

Much greater change was to come in 2003 when some sections of the Sugar Industry Act were amended—statutory boards were abolished as was the right to raise funds by statutory levies. However, Boards were advised in late 1999 of the forthcoming changes, which they could make earlier than 2003 if they wished. Millowner Bundaberg Sugar, all Canegrower groups in Bundaberg area and growers were consulted on a future structure for the three Productivity Boards. It was agreed that a single corporate body should be set up for the whole Bundaberg district rather than continue on with three separate bodies. Consequently, **Millaquin CPPB was dissolved in early 2004** (as were Fairymead and Bingera Boards), and replaced by **Bundaberg Sugar Services Ltd (BSSL)**, a company limited by guarantee.

Further information on BSSL and matters of importance for the whole Bundaberg area for the 2004–2014 period, are provided at the end of section 16.17 Bundaberg.

Work of the Board

An overall but sketchy picture of the overall **Fiji disease** situation in Bundaberg area was obtained in inspections made prior to, and soon after, Millaquin Board commenced operations. The worst affected areas were in and around Gooburrum in Fairymead and adjacent Bingera areas, while Millaquin/Qunaba area had a lot of farms affected but only very lightly infected.

The immediate requirement was to determine the full extent and incidence of Fiji disease in the area. The results were startling and helped set future policy. Many more farms were found to be infected, with 250 Millaquin/Qunaba farms known to have Fiji disease in the 1973 crop although most had only a few scattered diseased stools, and the south-eastern coastal area of Elliott Heads was relatively free. Thousands of tonnes of ‘clean’ NCo310 plants at Elliott Heads were approved by the Board for planting in 1973–74 by growers unable to use their own plants.

At this early stage, it was still hoped to limit the spread of infection and retain NCo310 for a longer period by introducing an Approved Plant Sources Scheme.

Development of the Scheme was accelerated, with the Board running the Mother Plots and Mill Suppliers’ Committees running several Secondary Increase Plots (SIPs) mainly in non-cane areas. These provided large tonnages of healthy NCo310 planting material for 1974 and future years. Considerable inspection effort also went into locating the most suitable ‘probably clean’ NCo310 plant sources in the Elliott Heads area for the 1973 and 1974 seasons.

An intensive program of inspections, roguing and compulsory ploughout of diseased blocks was commenced, but was phased down from 1975 as there were no real benefits and disease levels were escalating. It was continued for a while in the southern fringe areas where there was still only light infection. Some inspections were continued to identify how the epidemic was developing, to provide advice to growers on heavily diseased blocks which should be ploughed out, and to insure the MP/SIP plots contained no disease. The numbers of inspectors were reduced, allowing for levies to be slowly reduced from the high levels in force since 1973.

In early 1976, BSES introduced a comprehensive annual survey of disease levels throughout Bundaberg, to assist in prediction of future disease levels and provide a sound basis for control recommendations. In conjunction with Board members and staff, Millaquin area was divided into 10 defined localities, and 10% of representative farms in each were selected for monitoring by our inspectors in accordance with set criteria.

Data from inspections made in 1973–75 were also entered in the database. Inspections continued up to 1981, by which time the only significant area of NCo310 in Bundaberg was in central and western Bingera, and Millaquin had less than 2%.

Similar monitoring inspections were made in Fairymead (10 localities) and Bingera (12). The data provided by Board inspectors were vital in the campaign, validating predictions for rapidly escalating disease levels and heavy future yield losses in NCo310, and the removal of NCo310 as an approved variety as soon as possible. It also demonstrated the overwhelming influence of the original Gooburrum/east Bingera ‘oven’ area in spreading Fiji throughout Bundaberg and beyond, as it sent out a wave of increasingly higher infection levels into all mill areas. The edge of the oven area moved into Millaquin in 1976 and occupied the whole mill area by 1978 when heavy yield losses started to occur.

Resistant varieties were identified in the 1974–77 period, were multiplied as quickly as possible in the MP/SIP system, and the first major farm plantings were made with Q87 in 1977, CP44-101 in 1978, and Q108 to Q111 in 1980. Q87 and CP44-101 planting material had to continue coming from SIPs until Fiji levels were very low. However, the very resistant (but not immune) Q108-111 could safely be propagated on-farm for a year once infection levels dropped sufficiently. This helped to increase their popularity and rapidly decrease the area of NCo310.

The Board pushed for a scheme where a small amount of cane was bought by each grower each year and multiplied under Board supervision.

This became known as the ‘kilogram scheme’, and still operated successfully through the 1990s using isolated Mother Plots. This allowed the SIPs to be phased out. Inspection of planting material continued to be a priority issue for the Board. The whole scheme resulted in good control of RSD and other diseases, as well as its original purpose of controlling Fiji disease.

More information on this Fiji epidemic and work done on it by Boards can be found in Chapter 15 – Pest and Disease Control Work by Boards. Fiji disease was under complete control by 1991, and the last known stool was seen in the late 1990s.

More resources could be diverted into other matters as Fiji disease slowly came under control. **Soldier fly** had been a problem for some growers for many years, but had been adequately controlled until dieldrin was banned in the 1980s. **Cane grubs**, **pink ground pearls(margarodids)**, **RSD** and a minor **mosaic** problem received greater attention during annual surveys and grower interviews for collation of planting details and pest data. A new strain of **orange rust** suddenly infected the productive but highly susceptible Q124 in 2000, causing heavy yield losses. An emergency replacement program was promoted, requiring clean seed supplies of resistant varieties. Formation of grower cell groups, shed meetings and bus tours helped to keep growers abreast of the latest technology. The Board also worked with the local Productivity Committee to improve farm and mill area production, before this became part of its brief in 1991.

Board staff and members

Ken Corrie continued on as supervisor from Bundaberg to Millaquin-Qunaba, and remained with them until the early 1990s. He saw the epidemic build in Millaquin as expected, oversaw the monitoring inspections required for the control campaign, and moved staff back into other pest and disease work as time became available. **Michael Turner** started work as an inspector in 1974, and succeeded Ken as supervisor. He continued on with BSSL as field officer for pests and diseases to the present.

Dick Chapman spent only eight months as a Bundaberg Board member and was elected Chairman of the new Board, a post he held until 1982. He was the main driving force in the Millaquin Fiji control program, and one of the three major players in the Bundaberg District Fiji advisory group set up by BSES.

16.21 ISIS

Cane grubs, presumably Childers grub, were a problem in the Isis by the 1880s, and Isis farmers were reported in 1897 to be taking steps to eradicate the pest. **Isis Pest Destruction Fund**, initially known as **Isis Beetle Board**, was probably set up in 1897 to pay for beetle and canegrub collection. Nothing is known about its early structure. By 1913, and possibly even back in the late 1890s, it was controlled by Isis Shire Council (previously known as Isis Divisional Board) which could impose a levy on certain properties in order to finance payments for beetles and grubs (BSES 27th Ann Rep). The Isis Fund operated until the end of 1930, when Government subsidies to voluntary Pest Destruction Boards were terminated.

A **Childers Mill Grub Fund** was set up in the early 1900s or even late 1890s after Childers Mill started in 1895. The Fund paid for grubs during 1910–13 and probably did so in 1920 (CSR Ann Rep 1910–12 and 1920). However, the Fund was terminated shortly afterwards and growers were covered by the Isis Fund until 1930. **Isis Cane Pests Fund** was set up in February 1931 at a meeting of the Childers Mill Canegrowers' Association, to replace the previous Fund operated by Isis Shire Council (Isis Recorder, 5.2.31). Growers agreed to a levy of up to one penny per ton, and CSR Co. agreed to a 1:2 subsidy. It is not known what happened in other mill areas in Isis. The Fund ceased operations in late 1934.

The statutory **Isis Cane Pests Board** was constituted in August 1934 and the first meeting took place on 4 December 1934. The change to a statutory Board was probably precipitated by CSR closing its Childers Mill after the 1933 crushing season, and the need to cover all growers in the district. It operated until 1942. **Isis Cane Disease Control Board** was constituted in February 1939 to control Fiji disease, and operated alongside the Pests Board until 1942. **Isis Cane Pest and Disease Control Board (ICPDCB)** began operations on 1 April 1942 when the two existing Boards were amalgamated.

In July 1991, Boards were renamed and given additional powers to work and advise on all cane productivity matters, as well as retaining their existing powers on pest and disease control. So it became the **Isis Cane Protection and Productivity Board (ICPPB)**.

Much greater change occurred from 2003 when some sections of the Sugar Industry Act were amended—statutory CPP Boards were to be

abolished by 30 June 2004 if a replacement entity had not been set up, and the right to raise funds by statutory levies would be lost. This resulted in **dissolution of the ICPPB on 30 June 2004** and its replacement by **Isis Productivity Limited (IPL)**, a registered public company limited by guarantee.

Work of the Boards

The earliest reference found (SJTC 8:272, 1899) said that the **Isis Beetle Board** waxed cold and paid almost nothing in the last period—there were plenty of grubs but few were collected. Grubs were certainly a major problem in the early days—Department of Agriculture Ann Rep 1910–11 records 700 acres lost as grubs were so bad. BSES 27th Ann Rep noted that the **Isis Pest Destruction Fund** had paid for grubs and beetles for more than 30 years, i e before 1897.

BSES 31st Ann Rep gave details on the volumes of grubs collected in Isis for the 1913–1930 period, the lowest being 786 quarts and the highest 12,513 quarts—the latter worth about £950 to collectors at 18 pence/quart. **Childers Fund** paid for grub and beetle collections in that mill area, certainly in 1910–1913 and possibly from the late 1890s to 1920.

Isis Cane Pests Board's only business was to control grubs. It agreed to pay nine pence per quart pot for grubs collected during ploughing, with a maximum of £500 p.a. Later, as carbon bisulphide fumigation came into vogue, the Board promoted and subsidised its use.

Isis Disease Control Board was formed to control Fiji Disease in POJ2878. It employed a supervisor and started an inspection and roguing campaign with a gang of up to nine men. This built on the work done in 1938 by a roguing gang funded by Isis Mill and the Canegrowers' Executive.

Isis CP&DC Board continued the **Fiji** control campaign until the last diseased stool was destroyed in 1947. Isis was to experience its share of the great southern **Fiji disease** epidemic emanating from Bundaberg in the 1970s and 1980s. Roguing and plant source restrictions slowed the spread of the disease, but could never stop the build up in NCo310 and its further spread to other varieties. Clean seed plots, the introduction of more resistant canes and elimination of NCo310 brought control in the mid-1980s, but there were over 3,000,000 Fiji diseased stools in Isis at one stage.

With so much concentration on Fiji, **mosaic** increased gradually until it multiplied rapidly in the susceptible Q50 in the 1950s, and was not under good control until the mid-1960s. Another large epidemic blew up in the susceptible Q137, Q103 and Q95 in the 1980s, and was hard to control by inspections, ploughouts and clean plant sources until these canes were phased out. It became a major issue again in 1999, and a Mosaic Disease Strategy was put in place with BSES and adjoining Board areas.

RSD caused large yield losses at several periods in the 50s, 60s and 70s in the dry Isis region, despite Board efforts. Compulsory plant source inspections were introduced in 1975 at the Board's request, the first time this had occurred in Queensland. This plus a clean seed scheme reduced disease incidence to low levels for the 1980s and into the 1990s. An upgraded HWT facility was built in 1998, and was capable of operating at any time of year for treatment of wholestalk and billet cane.

Pest control operations continued throughout the years, mainly with insecticides for **canegrubs** and **soldier flies**.

Productivity issues for Isis CPPB in the 1991–2003 period included:

- Development of a 5-year Strategic Plan lodged with QDPI.
- Formation of a District Committee, with Canegrowers, Isis Mill and Board representatives, to investigate productivity initiatives.
- Introduction of Annual Productivity Booklets showing comparisons by soil type and variety.
- Setting up a District Soil Sampling Service for fertilizer recommendations.
- A Memo of Understanding with BSES and financial contribution for employment of a Research Assistant to implement a program of productivity improvement.
- Signing a Cane Variety Distribution Agreement with BSES as part of the clean seed scheme, due to introduction of Plant Breeders Rights.

Board Staff and Members

Earle Lockett was supervisor for 34 years, from 1940 to his retirement in 1974. He knew his area and growers well, and put his views

forcefully when needed. He was also a prominent participant at Pest Board Conferences. **Ian Ross** took over as supervisor in 1974, and remained in that position until August 2002. A quiet character who preferred to remain in the background in contrast to Luckett, but he knew how to get things done. **Bruce Quinn** was recruited from Bingera CPPB in 2000, succeeded Ian as supervisor in 2002, and continued with IPL up to the present (2014).

Jack Harley was Chairman from 1958 to 1975. He was a capable leader for the Board but always sought advice and operated by the book. He enjoyed Pest Board Conferences and was prominent in debate. **Bob Kingston** was Chairman from 1975 to 1986, a period covering a serious RSD problem, the great Fiji epidemic and the start of a mosaic problem. He successfully steered the Board through these. **Gavin Peterson** was a member for several years before becoming Chairman from 1986 to 1999. He was faced with mosaic and canegrub problems, and then incorporation of productivity functions in the Board's duties. **Neil Kingston** joined the Board in 1990, became Chairman in 1999, and continued as chairman of IPL from 2004 to 2014. He faced the problems of changing from a statutory to a voluntary structure, and then the withdrawal of the BSES advisory service.

POSTSCRIPT

THE 2003–14 PERIOD FOR IPL

AS A NON-STATUTORY BODY

(provided by Wayne Stanley, Secretary of Isis Board & IPL)

Prior to the loss of their statutory base in 2003, Isis was involved in discussions re future structures and funding options for Boards. QDPI tabled a Non-Statutory Structures Option paper in March 2003 for Board consideration and implementation. ICPPB resolved in late 2003, with Canegrowers and mill support, to incorporate as a company limited by guarantee, with current Board members becoming the Directors.

On 30 June 2004, ICPPB was dissolved. **Isis Productivity Limited (IPL)** was registered as a public company on 2 June and became the replacement entity, taking over all assets of ICPPB. New membership forms were executed by all canegrower shareholders. Further constitutional changes were endorsed by members in 2012 whereby all directors are now growers.

Major problems dealt with by IPL up to 2014 included:

- **Grower numbers increased** in 2005 by over 100, with consequent increases in area and volume of services required, when deregulation of the sugar industry allowed growers the choice of mill to deliver their cane.
- **Smut disease** was discovered in Isis in June 2006, the first record in Eastern Australia. This triggered a major inspection and eradication program by Bio-Security Queensland and BSES, in which IPL was deeply involved. It was quite restrictive until smut was discovered in other districts also. IPL accessed over 1,700 tonnes of resistant varieties from Ingham, Burdekin and Mackay for an accelerated replanting program in Isis, at a cost of over \$500,000. This was part of a Variety Replacement Program to remove all susceptible varieties over a 5-year period. This pro-active approach helped to limit tonnage and financial losses due to smut.
- **Sugar Industry RD&E reform** occurred from 2011, which ultimately resulted in loss of the BSES Extension Advisory Service. This was taken on board by IPL, so it now undertakes and delivers all productivity initiatives in Isis area including advice to growers. Consequently, a second Productivity Officer (Andrew Jakins) was employed in July 2012.
- The Board worked in 2012–13 on developing improved Corporate Governance, OH&S, Productivity Plan and staff work plans, and development of a website as part of improved service delivery to growers. IPL staff now manage eight(8) enviroscans on the different soil types in the cane supply area, with data currently published on the mill website.

16.22 MARYBOROUGH

Pests were never thought to be a major problem, and it was not until Fiji disease escalated in the late 1930s that a Board was sought. In late 1938, Maryborough Mill and the Mill Suppliers' Committee agreed to seek a Disease Control Board. **Maryborough Cane Disease Control Board** was constituted in early 1939, held its first meeting on 5 May 1939, and appointed its first Supervisor in June 1939. **Maryborough Cane Pest and Disease Control Board** was constituted from 1 April 1942 as successor to the Disease Board, and continued to operate up to 1991. It was renamed the **Maryborough Cane Protection and Productivity Board** in July 1991, when Boards were given additional powers under the Sugar Industry Act to work and advise on all cane productivity matters.

A far greater change came in 2003 when some sections of the Sugar Industry Act were amended—all statutory boards were to be abolished on 30 June 2004 and the right to raise funds by statutory levies was also lost. After consultation between the millowner MSF Sugar, Maryborough CANEGROWERS and the Board, it was decided that **Maryborough CPP Board be abolished on 30 June 2004** and the replacement entity would be **Maryborough Cane Productivity Services (MCPS)** controlled by a committee with grower and millowner representatives.

Work of the Board

Fiji disease control was the major preoccupation of the Board for 10 years from 1939 and again from 1976. Fiji had built up along the Mary River in the late 1930s and was threatening the 'wonder cane' POJ2878. Over 5000 stools were rogued during field inspections in 1939–40, and far greater numbers were destroyed in compulsory ploughouts. Plant sources within the affected area were prohibited, clean plants were introduced from disease-free localities, and planting of susceptible varieties was soon banned. By the late 1940s, Fiji disease was under control and no diseased stools could be located in the 1950s and 1960s.

Inspections were ramped up in the early 1970s, especially in Hervey Bay, as the Bundaberg Fiji epidemic exploded. Eventually in 1976, the first diseased stools were found in NCo310 on several Hervey Bay farms, as a result of infective leafhopper vectors migrating in from

Bundaberg. Within a few years, it was present in the main Maryborough cane area and continued to spread throughout the mill area despite the Board's efforts. Lessons learnt in Bundaberg were quickly implemented. Clean Seed Schemes were set up, restrictions placed on NCo310 and other susceptibles, compulsory ploughouts introduced, and NCo310 was banned. Yield losses were far less than in Bundaberg area as strong control measures were introduced at the start of the epidemic, and Fiji was under control by the late 1980s. Commercial varieties mainly have good resistance to Fiji now, and no Fiji diseased stools have been seen for almost 20 years.

RSD was another major problem that proved hard to control satisfactorily from the 1950s to 1980s, despite HWT campaigns and plant source inspections. The Board pushed ahead with campaigns to increase the amount of cane treated, and to establish better hygiene practices through sterilisation of all cutting implements, especially with chopper harvesters. Inefficiencies in actual practices were highlighted by droughts at the start and end of the 1960s, magnifying yield losses in diseased sections of fields. Grower shed and field meetings and individual advice demonstrated actual yield losses when clean and infected plant sources were used. It was the mid to late 1970s before RSD incidence levels were reduced to "reasonably low". Ironically, it was the Clean Seed Scheme for Fiji control which also produced excellent RSD control. It continued operating satisfactorily into the 1990s, by which time distant mother plots were no longer required.

Minor disease problems requiring some Board effort included **mosaic** in Q50 and then in a few of the new Fiji-resistant varieties grown in the 1980s; **red rot** in a few varieties over the 1950–1990 period; and **common rust** after its arrival in Australia in the 1970s. **Pest control** operations continued throughout the years, eg **wallabies** were a problem in dry conditions in earlier years, while **canegrubs** could be a problem in some soils or localities until insecticidal controls were developed.

Board Staff and Members

Ron Messer was supervisor for 22 years from 1960 until late 1981. He knew his area well, and spent a lot of time on the Fiji campaign both before and after the 1976 initial findings, and in establishing the Clean Seed Scheme. **Don MacDonald** was supervisor until 1996, taking on additional productivity issues from 1991. **Frank Sestak** succeeded him and continued on with MCPS to the present (2014).

Tom Braddock was the inaugural Chairman in 1939 and continued in that position for 43 years until 1983. He was Managing Director of Maryborough Sugar for that period also, which was of considerable help to the Board. **David Braddock** was then Chairman until 1998. **Tom Gee** was a member for 38 years from 1952, and Deputy Chairman from 1966 to 1990. For most of that time, he was a member or Chairman of Maryborough Canegrowers' Executive, which also benefited the Board.

POSTSCRIPT

THE 2004–14 PERIOD AS A NON-STATUTORY BODY

Prior to the loss of its statutory base, future structure and funding options for the Board were discussed with CANEGROWERS and millowner MSF Sugar Ltd. It was decided that, when Maryborough CPP Board was abolished on 30 June 2004, the replacement entity would be **Maryborough Cane Productivity Services (MCPS)**, funded jointly by growers and MSF. All assets of the Board were transferred to MSF on 30/6/04 on behalf of MCPS.

Major matters dealt with in the 2003–2014 period included:

- An advisory panel consisting of representatives from the grower community and the mill was set up to provide strategic direction to MCPS. It set work priorities that are most likely to achieve increased productivity, profitability and resilience.
- Priorities ranked in order were:– better varieties and management; better weed management; improved irrigation efficiency; improved crop nutrition; reduced harvest losses; improved pest and disease management.
- Discovery of **smut disease** in Isis in June 2006 changed priorities. Extensive inspections soon located it in Maryborough but at lower infection levels in susceptible varieties. A Variety Replacement Program was set up to remove all infected blocks and susceptible varieties as soon as feasible, and this pro-active approach limited tonnage and financial losses due to smut.

- The BSES Extension Advisory Service was closed down in 2012. MCPS was already contracted by BSES to provide its extension functions in Maryborough area so staff were already in place. MCPS now became directly responsible for all funding and deciding what work was to be done.

16.23 MORETON

Pests were not an obvious major problem in the area, so a Board was not formed until the Fiji disease epidemic was underway in the major variety POJ2878 at the end of the 1930s. **Moreton Cane Disease Control Board** was gazetted on 4 February 1939, held its first meeting on 21 April 1939, and operated until 1942. **Moreton Cane Pest and Disease Control Board** was constituted from 1 April 1942 as successor to the Disease Control Board. It was renamed the **Moreton Cane Protection and Productivity Board** in 1991 when Boards were granted additional powers under the Sugar Industry Act 1991 to work and advise on all productivity matters. In 2002, the millowner forecast that the mill would be closed at the end of the 2003 crushing season, so **Moreton CPP Board was dissolved in 2003.**

Work of the Board

The prime focus of Board operations for many years was the control of **Fiji disease**. Annual inspection and roguing campaigns were conducted from 1939 into the 1960s, with up to 10 men employed during peak periods in the earlier years. Together with stringent restrictions on plant sources for susceptible varieties, this helped to control Fiji in POJ2878 in the 1940s. It also delayed disease build up in NCo310 until the late 1970s. As the Bundaberg Fiji epidemic exploded in the 1970s, inspections were intensified in Moreton, diseased stool numbers inevitably increased, and the lessons learnt in Bundaberg were implemented.

The emphasis changed to Clean Seed Schemes, stronger restrictions on the planting and ratooning of NCo310, and disapproval of

all susceptible varieties. Yield losses were minor as only resistant varieties were being planted by the mid-1970s. An inspection gang remained as an important measure for monitoring pests and diseases.

The campaign against **RSD** occupied a lot of time from the mid-1950s with direct LHWT in a tank at the mill, plant source inspections and the use of clean seed plots. Campaigns were run to establish better hygiene practices through sterilisation of all cutting implements including chopper-harvesters. Problems arose in the late 1950s & early 1970s as sloppy practices and dry conditions resulted in obvious yield losses when contaminated plants were used. It took until the late 1970s before “reasonably low” levels of RSD were again achieved in Moreton area.

The introduction of the Clean Seed Scheme for Fiji control could be best described as a successful integrated Fiji/RSD control program—more distant mother plots were set up and run by the Board, so Fiji/RSD-free plants were used for planting bulk clean seed plots for use by growers. Quite good control of RSD was achieved in the area. **Other diseases**, including **mosaic**, **leaf scald**, **chlorotic streak**, **red rot and sclerophthora**, and **some pests** required Board action at times, but were minor compared to Fiji and RSD.

Board Staff and Members

Hubert Wells was appointed Supervisor in 1939, and directed and led the roguing and inspection gangs through the Fiji disease control campaign of the 1940s and early 1950s. He had a strong influence on growers up to his retirement in 1966, and was also prominent in Pest Board Conference discussions. **Jim O’Rourke** was supervisor from 1966 to retirement in the 1980s. He was involved in the long inspection and roguing campaign to control Fiji disease in NCo310 in the 1970s and 1980s.

Jim Blanch was Chairman from the Board’s formation in 1939 until 1966, and worked closely with mill management and the supervisor to have an efficient Board operation. **Neil Garrett** was on the Board for 24 years from 1966, 12 of that as Chairman. His term included most of the long campaign against Fiji disease and the removal of NCo310, while further changes were made in the focus of Board operations.

16.24 ROCKY POINT

Not a lot of attention was paid to pest and disease problems in the small mill areas south of Brisbane until the early 1940s. In early 1946, when only Rocky Point mill still operated, BSES surveys showed that the Fiji disease situation was quite unsatisfactory.

POJ2878 was threatened, and other canes were potentially in danger so a well-attended meeting of growers resolved to seek the formation of a Board. **Rocky Point Cane Pest and Disease Control Board** was constituted on 7 September 1946, the first meeting of the Board was held on 26 October 1946, and it continued to operate up to July 1991.

It became the **Rocky Point Cane Protection and Productivity Board** in 1991 when Boards were granted additional powers to work and advise on all productivity matters.

Statutory CPP Boards were abolished when relevant sections of the Sugar Industry Act were repealed in **2003**, and **Rocky Point Board was dissolved**. The Board functions were amalgamated with BSES extension functions, and both were undertaken by a part-time BSES Extension Officer who was previously the Board supervisor. The quite small Rocky Point sugar industry paid an additional service fee to BSES to cover this.

NB: This system continued until mid-2012 when BSES closed its Extension Service. The mill and Rocky Point CANEGROWERS then agreed to continue all productivity and extension services under a joint Productivity Committee up to the end of 2013. CANEGROWERS Rocky Point then agreed to continue all productivity and extension services.

Work of the Board

Fiji disease remained a problem for the Board into the mid 1950s, with many diseased stools discovered and rogued, plus blocks given ploughout orders. POJ2878 was saved as an approved variety for several more years, but this allowed Fiji to start infecting NCo310. The disease was never absent from Rocky Point area, began to build up again from the late 1960s, then showed further increases in Fiji infection in the early 1970s.

A Clean Seed Scheme to provide healthy commercial plants for affected farms was started and a Plant Production Committee was set up in 1975, with Board representation on it. Several Mother Plots and

Secondary Increase Plots were planted in the 1970s and early 1980s with a range of varieties. Most SIPs soon became infected with Fiji disease, but they performed a very useful function in limiting spread on farms.

By 1985, with NCo310 eliminated, Fiji disease declining and only resistant varieties being planted, a decision was made to move to a 'Kilogram scheme'—small quantities of healthy plants were taken by each farm from a safe Mother Plot and propagated further before commercial planting. This continued into the 2000s.

Fiji disease increased greatly in the late 1970s and early 1980s, with some yield losses mainly in NCo310. Inspections were made mainly for monitoring purposes to determine disease incidence, ploughouts and the state of newer varieties. NCo310 was phased out from 1983, but Q112 and H56-752 helped to keep the disease going to the end of the 1980s.

With the introduction of the resistant CP44-101, Fiji disease was under control by 1991, but it could still be found. This set the scene for yet another wave of Fiji to start in Q124 in the later 1990s, but it was soon brought under control by a bulk clean seed scheme.

RSD was the other major problem for the Board. A HWT tank was set up in the mid 1950s, and a new one was built in the late 1960s. RSD control was barely adequate at the beginning, but was out of control again in the mid 1960s. Plots of HWT cane for planting material helped bring it under control, and the Clean Seed Scheme since the 1970s reduced RSD greatly. **Pests** occasionally caused serious problems, eg germination failures due to **black beetle** in the 1950s and 1960s, and **canegrubs** in sandy soils.

Board Staff and Members

Vic Schwenke was employed as a temporary field inspector from 1973 and as supervisor from early 1980 to 2003 when the Board was dissolved. He was the last of eight Rocky Point supervisors, most of whom were employed on a part time basis. The Fiji situation became quite serious during this period, and he was heavily involved in the control campaign, particularly on the Clean Seed Scheme. He became part-time BSES Extension officer for Rocky Point area in 2003, and continued on as part-time Productivity Officer up to the present after BSES withdrew from the previous arrangement.

Frank Heck was a foundation millowner's representative on the Board, served as secretary for almost 20 years to April 1966, and retired

in 1978 after 32 years service as a Board member. He was always supportive of the Board and its objectives. **Edgar Huth** was elected to the Board in April 1952 and became chairman in May 1959 for 18 years.

APPENDIX: Sources of Information

1. BSES filing system, internal documents, publications

(1) Files

Relatively little was found until the 1930s, but 5 memos/reports are of interest:

- Memo to Under Sec, Dept Agric & Stock, from H T Easterby(Dir), 3.7.1922: *Why the Bill to set up Cane Pests Boards was rejected in 1916*. Grower & miller organisations claimed the Bill misrepresented what they sought from government during meetings.
- Report by H.T. Easterby (Dir), 28.3. 1928: *Destruction of Cane Pests*, lists 14 Voluntary Funds now operating and subsidies paid them from Sugar Fund in 1922/23 and 1927.
- Memo to Director by R W Mungomery, 5.7.1935: *Operations of Pest Boards*. Asked to give information on efficiency of Board & supervisor operations, & suggest what should be done to overcome deficiencies.
- Report to BSES Advisory Board by A.F. Bell (Dep Dir), 25.5.1937: *Disease Control Boards should be set up*, cannot control certain diseases in current circumstances.
- Memo to Minister for Agriculture & Stock from H W Kerr(Dir), 12.7.1938: Recommends creation of Cane Disease Control Boards on same lines as Cane Pests Boards & explains why, but combined Pest and Disease Control Boards not recommended as yet.

(ii) Internal Documents

- *Bureau History and the Sugar Experiment Stations Act*, by R.W. Mungomery (Asst Dir), 1968. (How & why BSES developed)
- *Some Notes and Some Comments on Bureau History*, by N J King, BSES Director, 1972. (lengthy recorded & unrecorded history & lot of good background information)
- *A Brief History of the S E S Act and the BSES*, by C.C. Horne, BSES Secretary, 1978. (Intimate knowledge of the Act)

- *Minutes & Proceedings of Annual Conferences of Cane Pest & Disease Control Board Conferences, 1935–1991.* (Lot of otherwise unrecorded information from discussions during the meetings)

(iii) Publications

BSES Annual Reports 1901–2003.

50 Years of Scientific Progress, 1950.

75 years of Scientific Progress, 1975.

Cane Growers Quarterly Bulletin, 1933–1981.

BSES Bulletin, 1982–2000.

Relevant BSES Technical Reports, Technical Communications, Entomology Div. Bulletins, Pathology Div. Bulletins. Of special importance were:

- *“Australian Sugar-cane Beetles and their Allies”* by J F Illingworth & A.P. Dodd, 1921. Div. of Entomology Bulletin No 16. (History from 1870s, good annotated bibliography)
- *“Monitoring the Fiji disease epidemic in the Bundaberg district”* by B.T. Egan, 1982. BSES Project Report.
- *“Recording Pest and Disease Data in the Australian Sugar Industry”* by J.K. Stringer *et al.*, 1997. BSES Project Report.

BSES Books, the 2 important ones being:

- *“The Queensland Sugar Industry”* by H.T. Easterby, BSES Director, 1932. Govt Printer, Brisbane. 226 pp. (The ‘Bible’ for its history of the industry up to 1932).
- *“Manual of Cane Growing”* by BSES staff. Printed 1953, updated & reprinted 1965. Angus & Robertson, Brisbane.

(2) Sugar Experiment Stations Act

- **The SES Act and subsequent amendments** are found in the relevant Qld Parliamentary Papers and Government Gazettes. Also <https://apps.legislation.qld.gov.au>
- **Three consolidations of the Act**, produced at 10-year intervals, were compiled to 1.4.42, 3.7.52 and 8.8.62.

(Printed copies available from Government Printer also contained copies of Proclamations, Regulations, & Powers & Duties of Boards)

- **Regulations under the SES Act.** Published in Government Gazettes of 15.2.24, 7.2.35, 2.3.39 and 30.5.87. (When new or greatly amended sets of Regs issued)
- **Powers and Duties of Cane Pest and Disease Control Boards.** Three Ministerial Directives were issued on 1.9.54, 8.8.62 and 1.4.77. (When major changes made)
- **Minister's 2nd Reading Speech for major Act Amendments.** (Copies kept by BSES Director)

(3) Qld Dept of Agriculture (Ag & Stock from 1908) publications

- **Annual Reports from 1894/5 to 1920s .** (only a few relevant items)
- *“Grub Pest of Sugar-cane (Lepidiota squamulata) of the Mackay District”* by Henry Tryon, Dept Agriculture, Brisbane, 1896. (Much early history, current situation & recommendations on control)

(4) Cane Pest & Disease Control Bds, Cane Protection & Productivity Bds, & the Cane Productivity Services entities replacing them

Staff and Board members provided a lot of local information for the individual Board histories from their files, reports & personal experience, also from local canegrower organisation files from early days where these had been kept.

(5) Other Sources

- Sugar Journal & Tropical Cultivator (SJTC), Vol 1(1892) – 15(1908). (published monthly in Mackay, covered all Qld canegrowing areas, widely read; invaluable source of information on canegrub problems, how beetle destruction funds started, & the fight for government subsidy)
- Colonial Sugar Refining Co (CSR) Annual Reports. (Relevant information on cane grub problems supplied by CSR Field Officers for 1890 to 1915 period)

- Australian Sugar Journal. (commenced publication 1908)
- Proceedings of the Queensland & Australian Society of Sugar Cane Technologists Annual Conferences. (QSSCT commenced in 1932. Relevant information in some papers)
- Sundry books published on Histories of many of the Sugar Mills or their Districts. (Most contained little relevant new information)
- *“Rust Disease Outbreaks and Their Impact on the Queensland Sugar Industry, 1870–1880”* by Peter Griggs. *Agricultural History* 69 (3), pp 413–437, 1995. (Review of the outbreak & causal investigations, including Bancroft’s papers)
- *“The gumming disease of the sugar cane, its dissemination and control”* by D.S. North, 1935. Agric Report No 10, CSR Co, Sydney.