

Can you help?



Roger Plumb and I have assembled at Rothamsted over the last few years a modest collection of old scientific equipment. We can thank some of our predecessors on the Rothamsted staff for consciously preserving most of the very old items, including, for example, balances used by Lawes and Gilbert in the 19th Century. Much of the collection, though, consists of items that had survived by accident and were found in the backs of drawers and cupboards or in little-used store rooms. Inevitably, there are some items that have proved difficult to identify. One such is illustrated in the accompanying photographs

and we would be pleased to hear from anyone who recognises it or can suggest what it was used for. The apparatus is about 130 cm tall (Fig. 1), and appears to have been designed for distillation. Its construction seems to us to be relatively unusual, which may suggest that it had a fairly specific use. As far as we know it is complete apart from various lengths of rubber tubing, which have perished and been lost. There is a spherical glass vessel at the top, which is protected by a safety shield (Fig. 2) fitted with an inspection window (made, we assume, of mica). There's a gas heating ring below the vessel and an asbestos sheet behind it.

A 'finger' extends into the vessel from above (Fig. 3), and it appears that water can be made to flow through this, thus creating a condensing surface. Condensate forming on the 'finger' must then, we assume, drip into the glass tube that extends into the vessel from below, to be collected in one of the two glass vessels at the bottom of the apparatus. The purpose of the second vessel, and that on the side (about three quarters of the way up), is uncertain.



We know from the label that it was made by Gallenkamp, and have made contact with the company that now owns that brand but to no avail. Our best guess is that it dates from the 1950s; we have a catalogue from that date but it appears not to be listed. The label does, however, bear the words 'Laboratory Specialities', implying that this bit of equipment was probably listed in the separate catalogue of specialist equipment that we know the company also produced. If you can help, please contact

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Conference report

Biomass and Bioenergy Crops IV, University of Illinois and Energy Biosciences Institute, Champaign, Illinois. 21-23 Sept 2011



Miscanthus Sinensis variety trials showing different flowering patterns at the EBI's Energy Farm (Photo courtesy of David Turley, NNFCC)

When it comes to energy, the United States can do better, said Steven Koonin, Undersecretary for Science in the US Department of Energy, as the keynote speaker at the AAB's 2011 Biomass and Energy Crops IV Conference in Champaign, Illinois, hosted by the University of Illinois and the Energy Biosciences Institute. He defined the major U.S. energy challenges as improving energy security in the transport sector (as the US spends \$1 billion each day on oil imports) and to provide heat and power in environmentally sustainable ways while strengthening US competitiveness. "We are focusing on six strategies to help solve these energy problems," Koonin said. "The transport strategies include deploying alternative fuels, progressively electrifying the fleet, and increasing vehicle energy efficiency". The three strategies for heat and power include deploying clean electricity, modernising the grid, and increasing building and energy use efficiency. Koonin also encouraged more research into reducing the cost of energy crop production. However, in reality there is likely to be some scaling back of support for biomass and biofuels in the US as many

existing tax concession and other support policies come to an end in the next 1-2 years. Other presentations highlighted that the US has a significant underutilised agricultural land capacity. Steve Long (University of Illinois) reported that the US has 37 million hectares in set-aside (under the US Conservation Programme) and a further 14 million hectares of agricultural land had actually "disappeared" from the most recent US agricultural land census. Much of the conference focussed on development of biomass energy crops, with presentations on breeding and perennial crop yield improvement, novel biomass crops (including sorghum and giant reed), factors affecting establishment and use of energy crops to minimise soil run-off. The latter is a particular problem in maize/soya dominated rotations where soil loss events of up to 49 tonnes/ha were reported for Iowa, making soil one of the State's largest exports! Two aspects of the conference emphasised the scale of financial support that State and Federal Governments as well as private companies are putting into developing

cellulosic ethanol in the US. The first was a presentation by Samuel Jackson (General Energy) describing progress with the State of Tennessee's \$75 million investment in the University's Biomass Innovation Park Campus, designed to integrate and optimizes the entire biomass supply chain and provide a pilot 250,000 gallon cellulosic ethanol facility (planned to open later this year). The second was the scale of investment in the Energy Bioscience Institute and its 320 acre Energy Farm at the University of Illinois which was the focus of a visit at the end of the conference. The EBI was established with a \$500 million commitment from BP over ten years. This supports 60 research groups and around 560 staff, all primarily focused on developing cost-effective cellulosic ethanol production. The scale of planting on the EBI Energy Farm alone dwarfs any UK or European commercial planting and provides an impressive range of crop breeding, agronomy and environmental monitoring trials, its well worth a visit.

-David Turley
Crops and The Environment
Group Convenor

The EBI switchgrass plots harboured some interesting inhabitants! (Photo courtesy of David Turley, NNFCC)