



Pollen and Health in Humans and Bees.

This was the title of a most interesting talk given to the Ayr and District Beekeepers at Belmont academy on 4th November by Christine Matthews. Christine is the Secretary of the Scottish Beekeepers Association, and is on the scheduling committee of the National Honey Show.

Christine's talk had four main parts:

- The history of the study of Pollen
- Development and formation of Pollen
- Pollen health in Humans
- Pollen health in Bees.

History: The word "Pollen" is Latin for Fine Flour.

Bradley, in 1717 describes it as Farina Fecundens. It is the Fertilizing powder produced by, and discharged from the Anthers of flowers and causes germination of the Ovule.

Observation on bees from the time of the Ancients to the 17th Century eventually brought the realization of the need for male and female bees, and insect pollination was identified.

Formation of Pollen: The Anther of a flower has 4 lobes with seeds inside –these are the Pollen mother cells leading to Pollen grains; the cells divide and undergo reduction of the Chromosomes i.e. the structure of DNA and Protein found in cells, to become Diploid. The mother cells divide 4 times producing a Tetrad of cells. Individual cells separate off and become individual pollen grains. These can be in the ground for thousands of years.. The grains have a thick outer coat, the Exine, which is variously designed. Every species has different characteristics, different shapes and sizes which are species dependent -some have furrows, some nets or spikes, some pores. Each characteristic e.g. size, shape, colour, furrows or net can be used to identify a particular flower e.g. Hazel, as each is specific to any particular plant. In two species, the Ericacea and Juncaceae there is no split and they remain as Tetrads. Heather remains as a Tetrad. This is why Heather honey is more gel-like, because it contains more protein; protein contains more colloid and is therefore more gel-like. Ragwort has a larger Pollen molecule containing more protein and therefore more likely to cause an allergic reaction.

Pollen Structure: When a Pollen grain is being formed Tapetum produces nourishment like human placenta and remains in the cavities of the outer walls.

Composition of Pollen:	Carbohydrate	60%
	Protein	20%
	Fat	7%
	Water	7%
	Minerals and Vitamins	6%

This is a perfect composition for a food substance. Also contains essential fatty acids, essential amino acids and essential vitamins, Folic Acid, Biotin and Bioflavins.

Pollen has been used universally and throughout time as a food, for its healing properties, by Ancients in religious ceremonies and as trade: and by modern athletes to enhance their performance.

Qualities of Pollen: It inhibits bacterial growth and defends against infection and toxins. Some claim it stimulates the appetite, while others believe it to be an appetite suppressant. It is believed to have anti-ageing properties due to plant flavenoids and defends against asthma and depression.

How Pollen affects Bees: Poor - Sunflower, Weeping Willow and Maize.

Average - Pussy Willow	22%
Oilseed Rape	24%
Vetch	24%
Above Average - White Clover	26%
Gorse	26%
Pear	26%
Excellent - Vipers Bugloss.	

Pollen and Bee Health: The 3 castes of bee have different needs which are met by the same nectar and pollen. The pollen required to rear one worker larva is 125-145 mg. Containing 30mg of protein. 200K new bees per colony per year = 23 - 45 Kg of pollen. Sterols are required for wax production. 30Kg of pollen is required for gland production especially the hypopharyngeal gland which is required for the manufacture of brood food.

The number of pollen foragers equates to the number of eggs.

Bees also need pollen for protein to make wax from wax glands for honeycomb.

It takes 100 flowers to produce two pellets of pollen and 3 - 20 minutes to collect a load—shorter than nectar.

58% of foragers collect nectar.

25% of foragers collect pollen.

17% switch between both: when brood and egg laying goes up, this can increase.

Foragers specialise in one type of flower from 20 days to death.

Foragers collect pollen Actively by scraping the pollen from anthers and proboscis and Passively onto body hairs where they stick due to electromagnetic activity. This is then scraped into pollen baskets , then unloaded into the hive by other workers.

Storage: some hive bees add a little regurgitated honey which prevents deterioration of the pollen and which inhibits bacterial growth and prevents fermentation.

Digestion of pollen by bees: as described previously, the grains have a hard outer coating with furrows, spikes etc. These pass through the bees digestive system into its honey crop which acts like the gizzard of a chicken by grinding up the pollen. Enzymes coat the grain to stop puncturing of the gut, but the grains may rupture through into the digestive system causing osmotic shock. Waste products are eliminated through the rectum. Winter bees have “Fat Bodies” stored in the abdomen to see them through lean times.

Christine’s talk was obviously extensively researched, and her use of visual aids really helped to clarify this fascinating topic. As Tony said in his vote of thanks, it really was a “Master class” and I am certain everyone learned a lot. I hope I have done justice to Christine’s subject in this account and we look forward to hearing her again soon.



The weather may be vicious with “biblical” amounts of rain falling in some unfortunate areas of the country, but we may be beginning to see a light at the end of the tunnel in our fight against the dreaded Varroa mite. With reports in this month’s Scottish Beekeeper outlining research published in the Journal of Apicultural Research and Bee World, describing how hygienic Honeybees are fighting back against the mite, coupled with a new treatment successfully trialled in Canada and highlighted in Apimondia 2009, and brought to our attention by Ian Jamieson in September’s Buzzword, dare we hope that our bees at last have a fighting chance against this nasty wee bug....Lets hear it for the bees. Log onto the website described on page 293 of the Scottish Beekeeper to see this activity. You can also go to you tube www.ivanbrndusic to see bees fighting varroa. Suzanne.

Buzzers and Bloomers at Prestwick Academy.

Buzzers and Bloomers involved 90 Primary 7 Pupils from Kingcase, Glenburn and Heathfield primary schools, and used the Rozelle Collection as inspiration for a heritage and biodiversity project in relation to the plight of the Honeybee. The project was a transition project where pupils worked on the project for 4 days before the school holidays, 1 day during the school holidays and 2 days after, in the new secondary School.



An Apiarist - Phil McAnespie (who he?) from Ayr and District Beekeepers Association visited the primary schools, brought an observation hive, and delivered an interactive presentation on the plight of the Honeybee.

The pupils then worked with the artists to create work inspired by the visits to Rozelle. Work was completed in September '09 when 3 artists set up an open studio setting for completion of the work. Young people from these schools worked with the 3 visual artists to create animation/film, textile banner and large scale drawings.

Partners in the project were: Community volunteers from Friends on Newton Park, Heathfield Primary School, Kingcase Primary School, Glenburn Primary School. Funded by Museums Galleries Scotland and South Ayrshire Scotland.



Also involved were the Scottish Arts Council through Arts and Cultural Learning with Cultural Co-ordinators supporting the Curriculum for Excellence by learning creatively across the curriculum supporting individuals to learn and become successful learners, confident citizens and effective contributors.



Ayr and District Beekeepers AGM at Doonfoot 18th November 2009

The 2009 AGM was presided over by Mr . Tony Riome, and the Secretary/Treasurer, Mrs. Lindsay Baillie. Everyone present was welcomed by Tony for having attended on such a dreadful night.

Apologies were read out from those who were unable to attend. and the 2008 minutes were scrutinised and affirmed as correct..

Matters arising; Ian raised the matter of the Apiary hives not working as envisaged when this was first mooted.

Presidents report: Honey production was poor this year due to the inclement weather. The shows attended by the ADBKA were: Neilston, Ayr Flower Show, Gardening Scotland, Celebrating Ayrshire, Nurseries Direct and Maybole Gala, with pupils participating in the Duke of Edinburgh award scheme attending several of these shows. Fifty people participated in the Open Hive demonstrations in Ayr, and Ninety-five at Gardening Scotland. This seems to indicate that the public perception of the importance of the Honeybees is increasing, and the shows are an important way of continuing to educate the general public on this matter.

Many thanks to all who helped out with setting up and manning the shows.

Education: Three members passed the Module 1 SBA Exam.

A microscope and camera was donated to the ADBKA by Mrs. Smith, widow of Mr. J. Smith, to aid the education of future beekeepers.

The beginners course was going well, and Tony and Phil gave numerous talks to schools, nursery schools and various groups, with Lindsay still involved with the Duke of Edinburgh award Scheme pupils.

A social night was hosted by Lindsay and Bob –many thanks to you both, and there was an interesting visit by Norwegian beekeepers which gave some insight into beekeeping in Norway. A most enjoyable treasure hunt and barbeque was organised by Phil and Joyce.

Special thanks to Bob and Lindsay for hosting the social night, Phil and Joyce, and committee members for all their work

Secretary's report:: Some members took their hive(s) to the oilseed rape at Kirkoswald with good results and Lindsay would recommend this to everyone as there is lots to learn in dealing with this type of honey product. Overall a poor year for honey.

The club honey amounted to 20 x 1/2 lb. Jars.

The reports of EFB and AFB in the East of the country highlighted the importance of everyone being up to date with their disease knowledge. There is some money for research from the government..

We have been unsuccessful thus far in hosting the SBA lecture. This may be due to the fact a venue has not been specified, or that lecturers are disappointed in our current venue. In

In future we may specify Belmont Academy which has a proper lecture theatre.

Membership: We now have sixty seven, up from sixty two. Unfortunately beginners often leave. We also have four junior members., and there are twenty four beginners. The beginners course lasted six weeks instead of five. Thanks to all who gave talks. Four tickets have already been sold for the next session.

Club apiary: the hut has been creosoted. Nine hives are now going through the winter with three Carrick Academy hives likewise. Hopefully this will provide more bees to give to beginners in the spring. Thanks to Bill for making the new hives.

The Sunday meetings and all other meetings were well attended.

We have been invited to Norway by the Norwegian beekeepers who visited us.

Library: Moir library books returned. There was no demand for them and they have not been renewed. The library will continue as before.

Letters have been received from various shows expressing thanks for our input.

We have increased amounts of items to sell in our shop: soap, calendars, candles and skeps.

Grant funding: shown on accounts as approx. £7,000 from Awards for All. Will be used to buy video camera to fit microscope, replace banners, new gazebo and barriers for shows. The money to be spent by the summer.

Web Site: there were some problems with difficulty of access. This has been fixed although there is still some work to be done.

A request was made for more members to enrol for SBA exams.

Tony thanked Lindsay for her report and she then gave her Treasurers report:

Previous treasurers proposed and seconded.

Recommendations: To use Belmont Academy as future venue for meetings but cost will rise to £2. per night. The majority of those present voted for this change, also proposal to raise subscription fee from £6 to £10 was agreed by a majority vote. Juniors to pay £4.

Election of office bearers: Joyce McAnespie and Vince Hepburn are retiring from the committee. Ian Stirling and Roy Robb were proposed and seconded respectively. Bill Clark was proposed and seconded in place of Evelyn Meikle who cannot continue due to work commitments.

Appointment of auditors: previous auditors proposed and accepted.

Kirsty proposed to conduct a First Aid night and asked for comments and input to this lecture - please send to Lindsay who will forward. Kirsty will also supply a First Aid kit to be used at the Apiary and will be available for shows if needed

Next AGM November 17th Nov 2010.

The meeting concluded at 8.36 pm.
