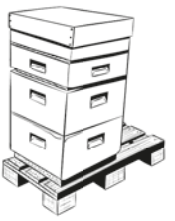
Interviews with Beekeepers





Steve Donohoe

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Murray McGregor, Coupar Angus, Scotland



'...when it comes down to a philosophy about bee keeping, it's that the best way to keep bees is the way that the bees would like to be kept.'
(Murray McGregor)

Introduction to Murray

I had heard of Murray McGregor long before I met him. When time allows he posts on Twitter and occasionally on the UK beekeeping forum. Such is his in-depth knowledge, based on experience rather than just theory, that most disagreements on the forum end as soon as Murray posts. It still surprises me that the bee farmer with the most hives in the UK comes from Perthshire, Scotland. Denrosa Apiaries, owned by Murray and by his father before him, had about 3,500 colonies at the time of my visit. Despite many happy holidays to Argyle and Bute and a love of the beautiful Scottish Highlands, I must have a slightly tainted Southern view of our Northern neighbours. How can bees do well up there in the cold and wet? It turns out that the Perthshire climate is perfectly capable of supporting Murray's operation. It is home to some thriving fruit farms as well as arable crops, but the main goal for Denrosa is to collect as much honey as possible from the prolific heather that covers the hills in late summer.

In common with many of my interviewees, it took a long time to persuade Murray to give up his precious time to speak with me. Eventually, we settled on the last weekend of November 2017. As I crossed the border it began to snow

heavily, and I had that sinking, "Oh no, this is never going to happen," feeling. After a few miles, it cleared up, and by the time I arrived at my hotel in Alyth, the weather was cold but clear. The Lands of Loyal Hotel was gearing up for Christmas; a huge tree had materialised in the lobby, but the decorating was yet to start.

That evening I dined out with Murray in Blairgowrie and made plans for the following day. He was keen to drive me to several of his apiaries in the area so that I could take photographs and ask questions along the way. We started our meal with a generous bowl of something called Cullen skink, which is a delicious creamy fish soup. I had never heard of it before but will certainly look for it on any menu from now on. I don't know if the term, "gentle giant," is quite the correct description of Murray but that was my initial impression. He is an imposing figure with an unexpectedly soft, soothing Perthshire voice. I suspect, however, that if I was an errant employee, I might see a less gentle side to the man; he does possess a piercing gaze.

The next day I was given a tour of some of Murray's apiaries in his little red Fiat van. These were his over-wintering sites, carefully placed away from view along the valleys of the Rivers Isla and Tay. One memorable spot was on a fruit farm. Murray had his hives directly beneath an electricity pylon, to show that the old myths about bees hating electric cables are just that. In my interview with him, later on, I asked about choosing apiary sites because I know that it is something of a passion of his.

After a break for a bacon sandwich, we returned to base, and I met Jolanta Modliszewska. She runs the queen rearing side of the business, which is vital in bee farming; good queens are the lifeblood of the whole operation. I interviewed Jolanta in the queen rearing shed in the land outside Murray's house, and then, later on, I interviewed Murray himself.

Talking with Jolanta and Murray



Queen rearing

Steve: Do you want to sit down?

Jolanta: No, it's fine.

Steve: Murray said that you are an important part of his business.

Jolanta: Yes

Steve: I've been interviewing other bee farmers and its always the queen selection and queen breeding that is the critical part of their business, because that determines their success, doesn't it? So how did it start for you?

Jolanta: Actually, I worked with Murray for a few seasons as a beekeeper. It was getting a bit too hard for me, because I love bees so much and I wanted to expand my knowledge. I thought that queen rearing would be good for me so I pushed Murray, and he said that it had been his goal for many years to do that.

Steve: Right

Jolanta: Four years ago he built this shed and I started off with 150 mating boxes, and was quite successful in the first year. The first year was a trial, then we slowly started to expand each year. We are now up to 900 mating boxes.

Steve: Do you mind explaining how you go about it?

Jolanta: How the whole system works?

Steve: Yes

Jolanta: OK. I have forty grafting frames and each frame holds 28 queen cups. My system is that at the beginning of May I ask Murray about bringing here some great colonies from out in the fields. I usually do the first grafts around 10th May. Last year I had four starters, and for each starter I have two finishers, because I can only put a maximum of 15 cells into each, to get nice big queen cells.

Steve: OK

Jolanta: I have my best queens in smaller boxes so they don't lay many eggs and can live quite a long time.

Steve: How often does a new breeder queen come in?

Jolanta: It's hard to say actually.

Steve: Is it just when you get a good one?

Jolanta: Yeah. I'm quite choosy, because we have 3,000 colonies, so it has to really be great. There is a huge European Foul Brood (EFB) problem in Scotland so I always check for that as well. Mostly, and Murray will tell you this, the black bees (Amm) are the ones who have this problem. We don't really breed from the black bees but if it's really great it can come here. Of course, some queens come from abroad as well. Murray buys them; I think I have some from Cyprus and Italy. I learned how to do queen rearing in Cyprus.

Steve: From Roger White?

Jolanta: Yes

Steve: How was that?

Jolanta: Yes, I had a nice time.

Steve: Did he teach you about grafting?

Jolanta: Yes.

Steve: I've only done it once and it wasn't very successful, but I have something wrong with my eyes.

Jolanta: OK

Steve: I've been told that I need to get a jeweller's loupe, or something?

Jolanta: I have something like that – see this one here

Steve: Oh, that's great. Where did you get it?

Jolanta: From Amazon I think. It was a gift from somebody.

Steve: It works well?

Jolanta: I don't use it. I still have good eyes so I don't need it.

What I use for grafting is the Chinese tool, but the wooden one. I don't like the plastic ones; the wooden (bamboo) ones are better, and I use a headlamp. I close the shutter so it's dark and keep a moist towel on the frame so larvae don't dry out. I keep the frame in the starter for two days. Each day I do four frames, so every day I'm doing grafting.

Steve: Is the starter colony just a big colony?

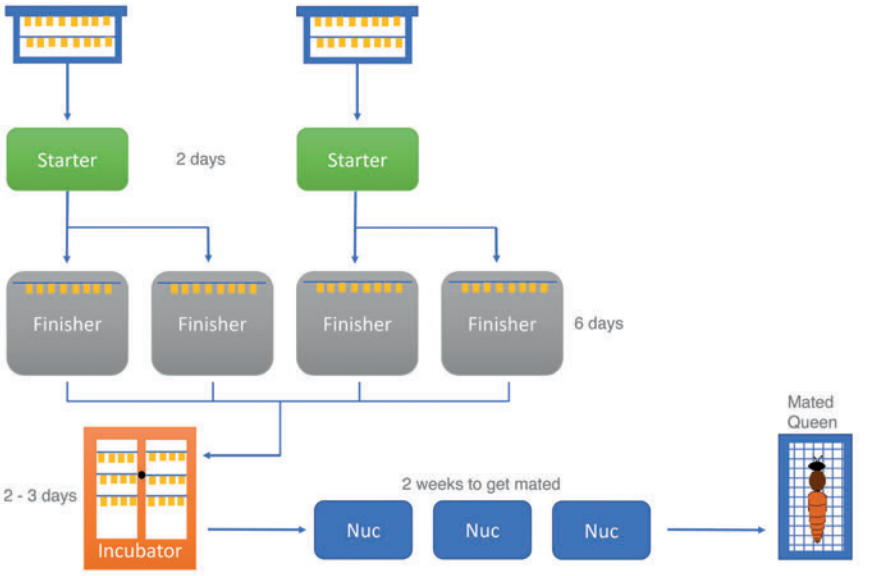
Jolanta: Yes. Not all colonies are good starters, so sometimes I change them. If it's wrong I will send it away.

Steve: How does it work, are they queenless?

Jolanta: Oh no, all starters have a queen.

Steve: With a queen excluder?

Jolanta: Yes. I keep my good queens on five frames in a nuc, then a queen



excluder on top, then another nuc on top of that with five frames. The frame of grafts goes in the top to get started.

Steve: When you do the graft is it into dry plastic cells or do you put anything in.

Jolanta: Sometimes when it is very hot it's good to put royal jelly in the cups first, mixed with water fifty/fifty. My teacher does that all the time in Cyprus because it's much hotter there. Here it is not usually necessary; it is quite mild but not hot summers.

Steve: To make sure that you have larvae of the right age is there some method for that or do you just find the right frame?

Jolanta: No, I just find a frame where the eggs have just become larvae.

Murray: She takes a frame that has been laid up, and she takes the larvae from the transit zone where they are just changing from eggs to larvae.

Steve: So, you take the really young larvae?

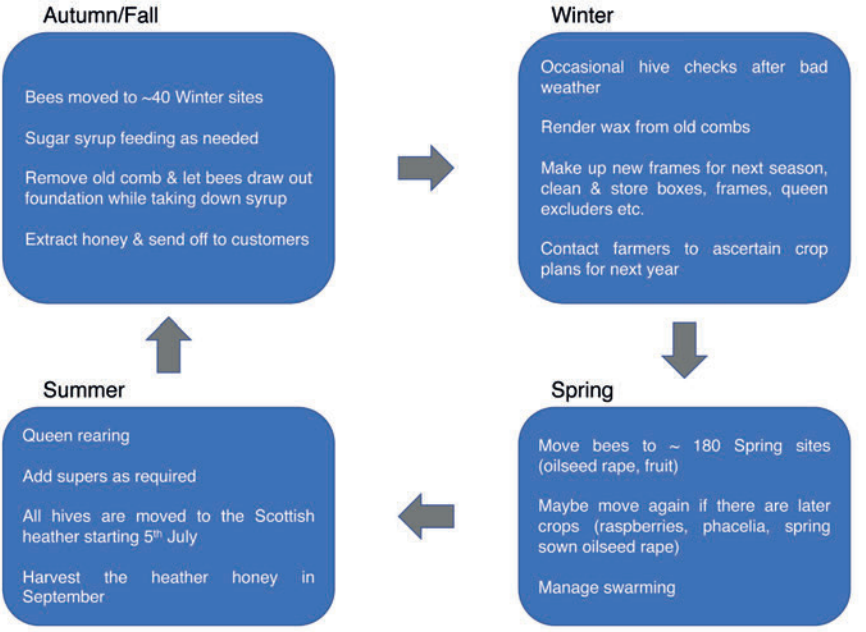
Jolanta: Yeah

Steve: Did you find that difficult at first?

Jolanta: No, not really.

Steve: You just go under it with the reed?

Jolanta: Yes. You go underneath the outside of the "c" not the inside. Never the end or the inside of the "c". [referring to the c-shape of a young larva]



Steve: OK. Then you pop them in the cups and put the frame in the starter.

Jolanta: Yes, just for two days, then afterwards into the finisher, which also has a queen.

Murray: Everything is queen right. You don't need to replenish anything when they are kept queen right.

Steve: I was going to ask about that.

Murray: You don't need to bring in any fresh bees or fresh brood; they just keep going all season when they are queen right.

Steve: They'll happily do that many, will they?

Murray: In the right conditions they'll do practically the whole lot. It's very rarely that you get 100% (of queen cells from grafts)

Jolanta: Actually, it happened once last year that I lost just one out of the whole frame, but I've never had 100%

Steve: I guess anything over…

Murray: More than half is perfectly good

Jolanta: So when I get a lot I have to split them into two finishers

Murray: That is so they all get well fed



Steve: Do you feed the finishers with syrup or pollen or anything?

Jolanta: If the weather is fine and there is lots of pollen and nectar coming in, that is the best, I think. Natural sources of food are better. When it's not like that I do feed them, yes.

Murray: But one thing you never have to do here is feed pollen; there are no pollen dearths here. They can always find pollen.

Steve: So, as far as timing goes…you graft every day, you said?

Jolanta: Yes, every day I do four frames

Steve: Then once they are sealed?

Jolanta: They go to the incubator.

Steve: Always?

Jolanta: Yes. Then for the first filling of mating boxes I wait for virgins to hatch. I don't put a queen cell in for the first time.

Steve: Why is that?

Murray: It's a far better acceptance rate. If you are starting from scratch there is a far better acceptance rate with virgin queens than queen cells.

Jolanta: Yes. Later, when I have taken away the mated queen, from then on I put in a queen cell, not a virgin.

Steve: How many days do the cells stay in the incubator?

Jolanta: I think they go in at eleven days, so they are in there for three or four days.

Steve: Then you've got to make sure that you have somewhere to put them!

Jolanta: Yes. I say to Murray, "I have fifty virgins – I need packages!" [laughs]. I do not want to keep virgins for longer than two days maximum. I give them a little syrup in their roller cages.

Steve: Then Murray turns up with this thing – is that right? [pointing to ventilated plastic box for packages of bees]

Murray: Yeah, or two or four or six of them, depending on how many she's asked for.

Jolanta: One day I had 80 virgins that needed bees. We can get about 12 mating boxes populated from one package of bees.

Steve: Is it those little tiny mating nucs? What are they called?

Murray: You get micro nucs, apideas…we use the slightly bigger ones called the Kieler, although we do have some apideas. That's a kieler over there – it's just a top bar hive; you use top bars, not frames.

Steve: No drawn comb in there?

Murray: No, foundation is best.

Jolanta: Then I put them somewhere cool and dark for two days

Steve: OK. Is the mating area around here then?

Jolanta: This is one area. The second one is at Coupar Angus. There are 500 mating nucs here and 400 in Coupar Angus. I have a better mating rate at the Coupar Angus site; it's a more sheltered place.

Murray: It's an old neglected orchard alongside a walled garden. You've got a high wall on one side and then high trees around three sides, so it's very calm and sheltered. The bees fly there in conditions that they don't fly here.

Steve: Is the first time they go out into mating boxes late May/early June?

Jolanta: Middle of May, when I start grafting at the beginning of May.

Steve: Does it have to be a certain temperature for them to go on a mating flight?

Murray: Theory says 20 Deg C but many queens in Scotland mate below that temperature.

Steve: Otherwise they would never mate at all! [laughs]

Jolanta: Yes. I think it's less than 20 Deg C for sure.

Steve: Then you've got a mated queen in a little box.

Jolanta: Yeah.

Steve: Is your part done then? Is that still you or is it passed on to somebody else once she's mated?

Jolanta: Once the queens are mated, from around June, it can get busy so I get help then.

Murray: I think what you were getting at is when does the responsibility transfer from her to the bee team. She has to catch them, mark them, cage them and then a box of cages gets handed over to the next step in the chain. Also, if she's got time, she'll take the cages out and put them in the hives as well.

Steve: Do they always go to nuclei first?

Murray: No. Just as required. They go into nuclei or full hives or they go away in the post to a customer.

Steve: And you are basically at it for the whole summer?

Jolanta: Yes.

Steve: What is your favourite bit?

Jolanta: Catching queens! Definitely [laughs] I like to see my babies.

Steve: To see how they have done?

Jolanta: Yeah, that's the best.

Steve: When you have caught the queen, what goes in next, another virgin?

Murray: A queen cell wrapped in foil, to stop them attacking it.

Jolanta: That's my system; the second time I always go with a queen cell. If I put a virgin in then it would fail. One year I tried with virgins and had zero success.

Steve: Do you wrap the whole queen cell in foil?

Murray: You just leave the tip

Steve: Then they just leave it alone?

Jolanta: Yep. Sometimes it doesn't work but I think it's 80% acceptance with this method.

Steve: When you catch the queen do you clip one wing?

Jolanta: I don't clip them. I just mark them.

Murray: We don't clip queens in the year that they are born. If a customer who lacks confidence asks us to clip them we will do it, but normally we won't do that until the next spring.

Steve: And you were saying that with marking you've got two dots?

Murray: No, we've got parallel colour codes. The 2017 colour is yellow but we use orange. Next year it's red but we use pink. That's just for the queens born in this unit. Any queens raised in the field or bought in from elsewhere all have the international colours.

Steve: OK. Is that how you know they are yours?

Murray: Yes. We know one of our own queens.

Steve: How many breeder queens are there in nucs around here?

Murray: Some are in nucs and some are in big boxes but she'll generally have 25 lines or something, between drone mothers and breeders.

Jolanta: I use some just for starters. It's hard to say how many because it changes from year to year.

Steve: What about drones? You bring in good colonies but do you do anything special?

Murray: In both mating sites we have apiaries close by, then we put colonies there selected because they are so good. The colonies here, and we've got twenty odd lines, also throw off plenty of drones. The chances of inbreeding are low.

Steve: I'm reading a book about mating where they were saying that the queens fly much further away to mate than her drones do to prevent inbreeding.

Murray: They also fly at different times of the day in some cases. Also, when

you've got a lot of virgin queens you get a lot of incoming drones; they are attracted to the pheromones.

Steve: Do you happen to know where the drone congregation areas are? No. It doesn't really matter does it?

Murray: It doesn't matter.

Jolanta: Sometimes you can hear them – a big cloud of drones.

Murray: They go out, they mate, they come back and it doesn't greatly matter to us where the DCA is.

Steve: Do you ever see them go?

Jolanta: The virgins? Yes, I sometimes see that.

Steve: They fly off with a cloud of bees don't they?

Murray: Not really with the mini nucs. They are almost on their own. There will be a few others going out but whether or not they travel as a group, you can't tell. There are hundreds of boxes around and the air is a maelstrom of bees sometimes.

Steve: What percentage get mated?

Jolanta: I think 60–70% maybe but it depends on the weather.

Murray: Yeah.

Steve: When it fails is the queen just gone?

Jolanta: Sometimes, if it's hot, I have problems with them absconding in apideas. It's just empty, and there are small swarms hanging around.

Steve: Otherwise it's just a drone layer?

Jolanta: Yes, a drone layer, or something wrong with the queen. Maybe she has a bad wing and didn't get mated because of that. This year I passed over 1,000 queens mated so we get more and more. I'm happy with this. We have such a short season.

Steve: How do you keep track of the different lines?

Jolanta: I have a numbering system.

Murray: She uses this notepad to record everything.

Jolanta: Yes. Lots of dates and numbers…date of grafting and number of mating box and queen lines…

Steve: Do you review all of these notes to see what went well?

Murray: Not particularly. You just know, without doing anything too scientifically. There's a whole load of successful matings there, just one "F". That line, queen J21; they are really nice queens actually. [Murray pointing to Jolanta's notes]

Steve: So you know them by their numbers?

Jolanta: Yes, and I have my favourites. [laughs] Of course, Murray sees the results of my babies, so he can tell me if a line is not good or if he sees problems.

Murray: If that happens they get put back in a normal hive and sent away to work.

Jolanta: Yes.

Steve: How many get sold, about half?

Murray: No, not even that. The main function of the unit is to make queens for ourselves but we are getting more and more orders, and more and more big orders.

Steve: Would you like to have more sales of queens?

Murray: This is not a unit of finite size. It can grow to fit demand, and Jolanta can have a full time assistant if she needs it.

Steve: Jolanta, would you like Murray to grow the queen rearing side?

Jolanta: Yeah, probably

Murray: It's her domain, and she's becoming well known for the quality of her work

Steve: That's great isn't it?

Jolanta: Yeah [laughs]. Thank you.

Murray: The Scottish bee inspector and the woman from the science institute were saying only last week that they think this is a great project.

Steve: Do you keep in touch with Roger?

Jolanta: Yeah, I have his number

Murray: She's new on the Buckfast group. I'm not.

Jolanta: Yes, I'm on the Buckfast group. I will not say that Buckfast are my favourite but…

Murray: We tend to have something of a favourite here, the Carnies, because they seem to be a bit more suited to our climate than the Buckfasts. The thing with Buckfast is, there's no such thing as "a Buckfast". Every breeder's Buckfasts are different. Roger's bees are very nice; they build up and get big strong colonies, but they under-produce in our climate.



Steve: Well, they're from Cyprus

Murray: Not really. He breeds them in Cyprus but they are actually northern origin stock. A lot of the queens from Southern Europe and from warmer climates are actually

from stock selected in the North, taken to the South to get the early season, but the genetics are northern. One thing you don't want is the "Cyprus Bee" [Apis mellifera cypria], because that is an aggressive bee. Roger has to work hard to keep his stock pure by using instrumental insemination and drone flooding for his open mated queens.

Steve: For someone like me, an amateur with a few hives, is it still worth trying to raise queens? It seems to be worth trying.

Murray: There's one danger; too many from one line and you can lose your vigour from inbreeding. We don't like any more than about fifty daughters from any breeder going out into our main unit for mating, so that we don't get the gene base narrowing down.

Jolanta: Yes, agreed

Murray: Amateurs who do insemination and selection from their best stock, even if they have 10–12 hives and they do three from one, they are actually going more inbred than we would ever like to go.

Steve: Right. So, you would say for someone like me with 10 hives that it would be better to find a local queen breeder who is doing what you are doing?

Murray: The thing is, you don't know what mother the breeder is choosing from; they may all be from the one mother if you bought queens off them. You don't know and you've got to be careful with that. You are probably better with a range of sources to try to keep the diversity. But then breeders sell their breeder queens to each other as well. It's worth asking what the mother lines are if they'll tell you, because they may all come from the same place. Keld Branstrup in Denmark supplies breeder queens to quite a number of people even in the UK. You may think you are buying two lines from two different people, but it may all lead back to one mother queen.

Steve: Are there any things that you found really difficult at first, or any tips or tricks that you have learned, Jolanta?

Jolanta: Actually I have to say that I have not really found anything difficult [laughs]

Steve: You just get on with it and take it all in your stride.

Jolanta: Maybe Murray can say something? I think I maybe care a bit too much

Murray: You care a lot, and you are too self-critical, and worry too much about things that you don't need to worry about

Steve: Have you ever had any disasters?

Jolanta: I was quite upset last year when I had 100 nice virgins and all failed to mate. I was really upset about that.

Steve: All were what, sorry?

Murray: All failed

Steve: Oh. Just bad weather or something?

Jolanta: No no. I just put them into established mating boxes, and that is why I don't do this now; this was my lesson

Steve: Oh, I see.

Jolanta: I think I will cry when number seven dies, because she has been with me from the beginning, from my first year of queen rearing. I am getting like an old lady! [laughs]

Steve: Can you tell that "it's going to be a good day today"?

Murray: Sometimes in the morning you can say, "a lot of drones will die today!" [laughs]

Jolanta: I am quite happy when after two days of bad weather the sun comes out so that they can mate. In bad weather I am always worried that they will not be able to mate. It is a relief when we get the sun.

Steve: How long before it is too late for mating? Is it three weeks?

Jolanta: I think three weeks is a bit too long. I wait for two weeks.

Steve: If they are not mated then you get rid of them?

Jolanta: Yes

Murray: Turf them out and start again. Once the bees get too old the only way is to turf them out and make up new mating nucs.

Steve: It's farming isn't it? Some things you control, some you don't.

Murray: Yes

Steve: OK. Well thank you. Very interesting.

Jolanta: Thank you

Steve: You are recommending the wooden Chinese grafting tool?

Murray: The one made from bamboo, yes. They are very hard to find.

Jolanta: Those ones are the best for me.

Steve: OK, thank you very much.

The following year Jolanta's beloved breeder queen J7 expired. Nothing lasts forever. After fortifying myself with a cup of tea it was time to formally interview the man himself.

Murray's story

Steve: How did you start?

Murray: My father started keeping bees in 1950, so as a young child I was brought up with bees in the family. They were with us all of the time. My mother used to extract the honey while my father did other things. I would be with her in the pram even, when I was tiny, but I started actually going to the bees with my father when I was eight. There was a little barrow that I used to carry supers in. I'd take it over a little bridge to the apiary in the evening when Dad came home from work.

When I got home from school, if I knew it was going to be an evening with the bees my mother had terrible trouble trying to get me to do my homework, because all I wanted to do was go out to the bees with Dad when he came in at five o'clock.

Steve: You weren't scared of them or anything?

Murray: No, not especially. I mean I didn't like being stung, I never did, and I still don't, but it's just a fact of life, it happens.

Steve: That was from eight years old…

Murray: Yes, then I got my first bees when I was fourteen years old. I used to pick raspberries in the summer for money, along with many young people from Coupar-Angus. It was strawberries and raspberries in the summer, potatoes in the autumn, and once I had the money my father took me to a town near Arbroath, to somebody who was selling bees, and the money was duly invested in my first hives.

Steve: You obviously had a good teacher in your Dad.

Murray: Yes, he was a good beekeeper and he had guidance from good beekeepers, so we were surrounded by the bee culture from an early age. He didn't just do bees, he was an electrician and did some market gardening just to try to make ends meet. He grew dahlias and chrysanthemums and in the mornings before school we'd be cutting them to be taken to the florist. My mother had an acre of blackcurrants which we used to pick and sell too. Then there were the bees.

Steve: As you got going with bees and were learning from your Dad…

Murray: Well, only for about three years, because at seventeen years of age I made the decision of infinite wisdom to leave school and join the merchant navy. I joined Shell as an officer cadet.

Steve: Oh right, OK.

Murray: My bees then were just incorporated into my fathers, which was a far larger operation. He had 300 hives and I had 12, so it just got absorbed.

Steve: So that was the end of beekeeping for a while?

Murray: Yes, but I realised from quite early on when I was at sea that I'd like to come back and take over the bees, and run it after my father. I liked bees, I liked the countryside and being in tune with nature. Working with the rhythm of the seasons gave me a good bit of pleasure. I was always a bit of a dreamer.

Steve: Other than your father did you have any beekeeping heroes as it were, or people that you read up on, or were inspired by?

Murray: I would have to admit, possibly to my shame, that I had never actually read a beekeeping book from cover to cover. Even today the number I have read I could number on the fingers of one hand. I didn't have any other beekeeping heroes apart from my father. There was no particular beekeeper who I thought was wonderful, but there were a couple I thought were disastrous. I learned mostly from my father and once I was back working as a professional beekeeper he remained my best advisor, friend, and confidante until he died a couple of years ago.

Steve: That's nice isn't it, to have that bond?

Murray: Yes. He was so interested in what was going on with the bees that if I came in to see him and anyone else was there with him they knew right away that his time for them was over, because even at 95 years old he would say, "I want to hear about the bees."

Advice on becoming commercial

Steve: One of the things that I always ask is about people (and you have referred to dreamers) who think that having successfully kept 10 hives they can scale up to hundreds and go into business. I just wondered if you have any advice for those people? To go into business as a honey farmer what do you need to keep in mind before throwing your money at it?

Murray: You have to bear in mind that it is a very inconsistent profession. You'll get years when you think it's easy and you'll make money and do very well, but you'll get at least as many years when you make a loss. It is not an easy thing to do long term. It is best for people who have already got significant money behind them and they can afford to take a few seasons of losses. The best plan is to go from being an amateur beekeeper to part-time professional; keep your job and do your bees at evenings and weekends. Once you've ironed out the errors and you are starting to do consistently better than the average Joe around you,

then that's the time to jump to full time professional. You must always be aware of the risks.

Steve: If somebody near you had such aspirations, I guess you could argue that they are future competition, could they come and work with you for a few years to learn the ropes? Would that be a good path?

Murray: We generally don't take people on in that kind of way. You have to accept in life that if somebody works for you and they decide to go off on their own and run their own business that's just a fact of life, and you just have to accept it, and feel good that you played a part in getting them there. You can't resent it because you can become obsessed with inconsequential matters if you do. We would not particularly take anybody on who at the outset declared that their aim was to go into full time business on our patch.

Steve: No, that wouldn't make sense would it.

Murray: If they stated initially that their intention was to go into business we wouldn't hire them. We train people on the job with us in the hope that they're going to work with us for several years.

Steve: Can you say roughly how many hours you spend per week working?

Murray: It's probably somewhere between 28–29 hours per day! Seriously though, in a field like this, the distinction between work and leisure is very blurred. This is a life rather than a job. You live the bees. The bees are your life, and you can quite often find yourself working with bees all day and then, what to do in the evening? Look at more bees! Because it's a pleasure as well as a job, you can spend a lot of your time doing things that are not particularly constructive in terms of achieving some work target, but they are actually good for your soul. You go around and just look at things and smell things and see what's happening – it's not work per se, but you're still at the bees. So, to distinguish between the number of hours that are actual work from those that are just pottering around is quite hard. There will be weeks where, if you took a strict line on how much was work, then some weeks I'll do nothing, but on other weeks I'll easily do 100 hours.

Revenue splits

Steve: Just thinking about your revenue, you've got honey, split into normal honey and comb honey, then you have nucs and queens…how does that break down?

Murray: Well, 80% of our income is from heather honey, as a ball park. The

rest is made up of blossom honey, nuclei and queens, and trading in package bees. Roughly speaking, as a general average, about 10% of the heather honey revenue will come from comb honey. The rest is sold in bulk in barrels.

Steve: Does it ever happen that the heather doesn't flower?

Murray: You occasionally get seasons where the heather doesn't work. After the foul brood outbreak in 2009, up to 2016, we had five poor years (meaning below average years) in that period. We've now just had two above average years, one after the other, but that doesn't quite make up for the shortfall. There are years where the heather doesn't flower well, or the flowers have very little nectar, because it hasn't had enough sun on its back in the lead up to the flowering period. If it doesn't get the sun at that time the plant doesn't make the sugars that become its nectar.

Steve: Can you tell when that's coming?

Murray: Not especially, no. There are years where you think it fits the bill for a failure and they're not, and there are years you think are going to be a Klondike, and they're not. You just have to move them all to the heather anyway and see what happens.

Worst years and best years

Steve: Can you think of a particularly horrific bad year, like the worst year ever?

Murray: My worst year was 1985, which was followed up by 1986 which was almost as bad.

Steve: Not really what you want, is it?

Murray: No. We had a disastrous year; 1985 was a terrible summer. A terrible summer actually hits you with a double whammy, because there was very little blossom honey, then it rained all through the heather. It rained almost every day from the end of June to the end of October. There was flooding, no heather honey and the bees stopped raising young bees, which was what made it so very serious. We had very little honey, and what happened with so few young bees is that we had a huge spate of winter losses. The hives that survived winter and were alive in early 1986 were under sized and took much of the year to recover. So, 1986 was just as bad a honey year as 1985, but was caused by a combination of it being another poor summer and the lack of bees early on. It took two to three years to recover from 1985.

Steve: When did you start?

Murray: My first full season was 1982

Steve: Right, so this disaster was early on in your career.

Murray: Yes. 1982 was OK, 1983 was a poor one and the heather flowered very late, then we got a bumper year in 1984 followed by a catastrophe in 1985.

Steve: What about, conversely, any amazingly good years?

Murray: We have had a couple of real crackers. My father always was on about 1955. It was his best year and the year I was born. He had a phenomenal amount of honey per hive. It was all early season honey before the heather. We got a season in the 1990s, I think it was '92 or '93, which was very, very good, and the only time ever that my average per hive beat my father's best year in 1955. It was quite a golden moment. We have had some good crops in the medium past, and these last two years have not been bad, but the year that sticks most in my mind, despite it not being our best one, was 1984 – the one before the catastrophe, because it was a tremendous year for bell heather. Some years we get it, some we don't. My father and I were extracting bell heather honey up to 10 o'clock at night, just to get the boxes free, to get them back to the bees the next day. In some places we were taking off a ton of honey in a day, and taking the boxes back, and 10 days later they were full again.

Steve: It's a good job that you had that year given what was to follow.

Murray: Yes

Steve: Well, now you mention averages and so forth, what would you say is an average honey crop for a production colony?

Murray: Our long-term average? We don't really count the blossom much, but we should be looking at about 10kg for blossom honey. It used to be more like 15kg but clover is more or less an extinct plant round here now. We used to get 15kg to 20kg with the clover and when the raspberries were on, but neither of them are here now, so blossom honey averages have declined to about 10kg per hive.

Heather is our main crop, and our long-term average is about 20kg, 42lbs – 44lbs per hive per year, going back 30 to 40 years. The changes in methodology in recent times means that our average is rising slightly now.

Steve: Is there any particular thing that you think is responsible for that?

Breeding programme

Murray: We've done a fair bit of changing of bee stock. We have a breeding program in place using selected stock that's done well, combined with the fact



that we now try to split everything early and re-unite the splits to the parent hive at the heather, which gives you an extra chance of a crop.

Steve: We were talking earlier about how many hives and how many apiaries you have, and where they are, and you showed me your spreadsheet for that. Can you give me a quick summary of how it all works across the season?

Murray: We regard the start of the season to be in the autumn. It sounds a bit bizarre, but that is the time that you put in place the building blocks which determine what you've got to work with in the spring. We collect all the bees back from the heather to a relatively small number of locations, if you can call 40 sites relatively small. We feed the bees and do our comb renewal so that the bees are in good condition going into winter.

In the springtime we have already collated all the information from the farmers about what crops are growing where, and where the bees are going to go, so we set about dispersing the bees from their wintering sites to a relatively large number of spring sites, which can be 170 to 180 places. They are set up in far smaller groups to avoid overloading the forage in each place. While the oilseed rape is in flower there is abundant forage but as soon as it tails off, if you have too many hives in one place the bees go into decline.

Steve: Right

Murray: So, they are moved out from their winter sites to the oilseed rape. If we have an extra crop to go to like spring sown oilseed rape, or raspberries or perhaps some phacelia or borage, we will move them onto a second crop because happy bees are working bees. As long as they have something coming in the colonies do well, they stay healthier and have better morale and develop better for the heather. If there is no second crop to move to they stay where they are and we hope they get a bit of clover, something from the trees, maybe Himalayan balsam if it comes along in an early flowering area.

Then from sometime around 5th July we start the heather moving. All of the bees are collected from all of the summer sites.

Steve: Some in England and some in Scotland?

Murray: Yes, we have a unit of bees in England centred on the old Cooperative Farms at Hereford and Cirencester, and they tend to overwinter down there and go to spring crops there, but all hives are moved to the heather. We have four distinct heather areas: Aberdeenshire, which is basically around the valley of the River Dee, West Perthshire, the A9 between Dalwhinnie and Aviemore, and then we also have recently acquired some territory in the Angus Glens, in particular Glen Esk.

They go to the heather to get the heather honey crop, which is the economically crucial one. They are moved there throughout the month of July. At that point we no longer examine the bees, it's just a boxes-on operation – add boxes as required, re-unite splits, and then wait until the end of the first week of September, when we commence the harvest.

Then the whole cycle repeats again. You harvest the heather honey from the bees on the mountains and then they go on the lorry and you bring them home to their winter place, feed them and that leads into the next spring.

Steve: It's a lot of moving of boxes.

Murray: Lots of moving of boxes.

Current issues and controversy in bee keeping

Steve: That's really interesting actually, thanks. Now some out of the blue questions which happen to be next on my list. There are some controversial issues which I sometimes read about, the first being so called "natural beekeeping" – what are your thoughts on that?

Murray: Well, bees have been kept by humans for thousands of years, in a

variety of ways. What's fashionable or not fashionable comes and goes in waves. The basic fact is that beekeeping isn't natural for the bees. They don't realise this but it isn't. They would naturally be living in a hole in a tree, or a cave or something like that, so "natural beekeeping" is something of an oxymoron.

I'm not in favour of out and out natural beekeeping because I don't believe it optimises the bees. I don't believe it optimises their health or their productivity. Bees were not kept for any time, apart from the last five years, as some kind of conservation exercise; they were kept because they were useful. Beeswax was used by monasteries for candles and honey was used as a sweetener and a food. This idea of keeping bees just for the sake of it, and that taking honey is bad, which some natural beekeepers believe, is to me just a fashion. It doesn't do the bees any great favours and it doesn't give an incentive for the beekeeper to keep doing so. I worry about the lack of comb replacement, disease control, and I worry about swarming. Some of them keep the bees in remarkably small cramped spaces, which makes swarming inevitable. With swarming, your nice friendly neighbours might not stay friendly for long if they are regularly being besieged by swarms of bees landing on their pergola or whatever.

Steve: Yep

Murray: You have a responsibility not only to the bees, to keep them healthy, but you have a responsibility to your neighbours – that your activities with bees don't impinge on the lives of those around you.

Steve: Presumably treating for varroa would not be natural?

Murray: There are ways to treat for varroa that are considered natural, but the interpretation of what's natural basically depends on the belief structure of the person involved. For example, what a vegan would consider to be natural beekeeping is entirely different to what an organic gardener would consider to be natural. It really depends.

Insulation and ventilation

Steve: Another thing that crops up a lot, mainly between the UK and the USA, is the insulation versus ventilation debate, if there is one.

Murray: I think it's a debate largely between those who want to be fixed in that way. There is no real doubt that in the winter insulation is important and ventilation, especially top ventilation, is anathema to the bees. The bees tell you what they want. If you put a board on top of your hive with a vent to allow for top ventilation the bees gum it up. They don't want it. We've never seen

any advantage whatsoever to top ventilation, but a lot of advantage to having insulation.

Steve: I think from what I've heard from discussions over the pond, the idea is that over winter they will get damp without the top ventilation. Do you use solid or open mesh floors by the way?

Murray: We've got both.

Steve: I wonder if that makes a difference?

Murray: I don't think it makes a huge difference but I would suggest that mesh floors are slightly superior to solid floors from what I can see. But, to compare what happens in the UK, with a relatively gentle maritime climate, to what happens say in the Midwest USA or the Canadian prairie provinces, with severe cold, icing up of the front of the hives at the bottom and many problems that we don't encounter – to say in the UK that we know what's best for somebody in North America would be nonsense. They are working in their environment and they've got the best idea of what works for them.

However, like everywhere else, there is a tendency in beekeeping to get bogged down in tradition. So, if traditionally that's the way it's always been done then that's the way it must always be done. In fact, beekeeping is, or should be, like any other progressive craft; open to modern methods so that changes in technology and materials should be exploited to our advantage.

Buy them in or grow your own queens?

Steve: OK. The other one was the importing of queens. You discussed with me importing Italian queens. I guess it is the "buy it in" versus the "grow your own" discussion.

Murray: There's a lot of aspects to it, and a lot of people will say that you are importing all these diseases, exotic pests, and that sort of thing. It's not happening. It never has done, not with legal shipments of queens done the correct way; there are no serious issues with it. To me, it's important that we have access to the stock we need to do the job we need to do. There are other people looking at what we want to do in terms of honey production, and insist that it's wrong, and queen imports should be banned. There are many professional bee farmers in the UK who would be given acute difficulties by such a policy, because they couldn't get their queens early enough in the year.

Our policy is that we're doing a twin track, and you've seen whilst you've been here that we've got our own queen rearing unit rearing a large number of queens each year, and a large number of nuclei. This doesn't get rid of the

need for us to have access to imported stock; far from it. To keep the genetic diversity and to keep the right bees we need to buy breeder queens from the best sources, and also to be able to get access to large numbers of queens when we need them. This is not a thing you can plan for in the UK, because the queens sometimes go for many weeks without mating. The flowers are not going to wait until your queens are mated; you do require some kind of reliability so you can plan things.

Having our own bees bred in the North of Italy gives us the option of having mated laying queens from our own stock back in our own hands at least six weeks early. This gives us more flexibility and more chance to get a crop to pay the mortgage.

Neonicotinoids

Steve: OK. Lastly on the controversial things is the question of neonicotinoids – some people are sure they are killing our bees, whereas whenever I talk to a beekeeper they actually quite like taking their bees to the oilseed rape, which is apparently grown from neonic coated seeds.

Murray: Neonic seed coatings have now not been used for at least 2 years, but we never noticed any decline in our bees when they became more common, nor have we noticed a rebound since. It was a non-issue to me. However, it's fair to say that the balance between collateral damage to bees and pesticide use has been pretty healthy for at least the last 30 years. There's not the damage that there used to be in the past. The broad-spectrum insecticides have gone and the bees are generally much the better for it.

My feeling on the neonicotinoid debate is that there may well be something in it in certain areas with certain climates and certain soil types. It's not applicable in our area because we've not seen any negatives at all with it. I did feel rather that we were somewhat hijacked by the movement against the big agriculture companies, and activists were seizing on us as a cause to champion, without there needing to be much evidence that it was a problem. Will I miss neonics? Of course not. The idea that you would like there to be a pesticide floating about in the environment that may or may not be harming your stock is not rational. Yes, we are glad to see them go and in a way it's about what comes next – it could be worse.

Steve: Also, I suppose if it causes farmers to grow alternative crops, could that be a problem?

Murray: It's a problem in the South because there are pests down there which

they are hardly able to control, so the oilseed rape growing seems to have moved somewhat North and West from its original pattern, which was East Anglia, Kent, Southern England and up into Lincolnshire and Yorkshire. Its tending to move further out now to get away from the pests. There will be a number of bee farmers really toiling for forage now that their local farmers aren't growing oilseed rape because of the lack of neonicotinoids. Further out they may be gaining, having never had the luck, if you could call it that, of having oilseed rape before.

Steve: I have seen your spreadsheet records showing the apiaries and so forth. Are you doing weekly inspections?

Murray: Our aspiration is to do them on a roughly 10 day cycle, but the key word is aspiration. A few days of rain, or some people off sick, or a truck breakdown can interfere with it. We try to adopt a system that means that if we are late it isn't critical. We go round the bees on a regular basis, aspiring to do it every 10 days or so, and each round is a full examination with swarm control and disease checks. Give them enough space, do any manipulations that are required.

Steve: Do you record in some way the outcome of those inspections or do you record by exception, in other words only when something is wrong?

Murray: We have an apiary report sheet which the guys have to fill in each time. It includes number of hives at the start, number at the finish, number of splits they made, how many boxes they had to add or take off – it's all on the sheet and is a global figure for the apiary. On an individual hive level, we basically record things by writing on the front of the box. We do a different colour on a different place on the hive each year so that by the time you come back to the same colour and place it's 10 years down the line and the pen has faded off. There are no sophisticated things like hive record cards or anything like that.

Disease and pest management

Steve: So, disease and pest management; what do you do and are there any stories about that?

Murray: Are you looking for hilarious stories?

Steve: [Laughs] Well, there's not going to be many with disease and pest management.

Murray: Oh, I don't know!

Pests and diseases. We've seen most of them now. We encounter on a regular basis nosema of both types, chalkbrood, sac brood, European Foul

Brood, very rarely American Foul Brood, and varroa of course. One thing that's disappeared since varroa has been treated for is braula, which was a parasitic fly that lived on the bees. You saw it on every hive but now we haven't seen it for years.

The biggy of all these is varroa, and varroa brings along with it viruses, or it brings increased susceptibility to viruses that were already there. The big thing for the rest of my lifetime and probably the next generation is going to be the constant war against varroa, and the constant need for fresh and effective treatments.

Steve: Because they get resistant?

Murray: They get resistant to it. There are a lot of fairly interesting and a lot of fairly romantic notions about the breeding of varroa resistant bees. It will happen in time but I'm not holding my breath. Most of the schemes to produce resistant bees at the moment either peter out, or they produce a bee that's of little or no commercial value, because they are so obsessed with hygiene that they don't raise enough brood; they're always picking it out.

There's a long way to go before we have a resistant bee that won't require treatment and will continue to be healthy. A lot of people focus so much on varroa and viruses that they forget that the old killers, especially nosema haven't gone away. They are still there so you must maintain your hives in decent condition and feed them for winter with good sound food that is not going to cause any conditions like dysentery, so you can prevent nosema from becoming a runaway problem.

Steve: That's why you use the invert syrup?

Murray: Invert syrup is ideal. The reasons for using it are several: (1) although it's more expensive than sugar you have no labour involved in making it, it's ready to use straight from the tanker (2) the product never deteriorates because the water content in it is sufficiently low so as not to support microbial growth (3) the bees just take it down and cap it – it's as good as honey and doesn't crystalise in the combs. We'd never go back to sugar unless we could get it for virtually nothing. The lack of microbial growth means that syrup can stay on the hives for protracted periods. It doesn't ferment or upset their stomachs or cause dysentry or anything like that.

[I noticed that in 2018 Murray changed over to using normal sugar syrup made on site, using dry sugar plus water mixed in a giant tank, and asked him about it:



Murray: For very late feeding invert syrup is preferable as it never ferments. That is, in part at least, due to its concentration being

so high that microbial activity does not occur. However, I got a great offer from a British sugar company. The price they offered made it viable to have a mixing system built to turn out syrup at 66% solids where microbial growth is negligible. Yes, it's marginally inferior, but the savings in one year are huge. We saved tens of thousands of pounds in the year, net of the cost of the tank, and with hive numbers increasing by 25% next year the future savings will be greater still.]

Steve: For nosema is it just a case of being a good beekeeper and keeping strong colonies?

Murray: Nosema is a sneaky one. There are two nosemas; the traditional old one Nosema-apis, which used to cause colonies to collapse in winter or fail to build up in the spring, and there's Nosema-ceranae, which is a relative newcomer. It has a completely different pattern in that it gets you in the warm weather, in the summer. They are both around and they both require you to manage bees in a sound manner without stressing them too much, because as soon as they get stressed or start to defecate inside the hive it just becomes a runaway problem. Keep your bees fed with as clean food as possible on relatively clean new combs and then you need to put them on a site where they are not sitting in a cold pool. Sitting in cold dank air makes things worse. These things reduce the risk of nosema but you can't be completely sure that you'll be away from it.

Steve: From all of your years of looking after bees what would you say the worst disease or pest problem you have ever had was?

Murray: On an ongoing basis over the years the thing that has probably lost us more colonies and cost us more income than anything else will be varroa. However, in 2009 this area was hit with a European Foul Brood (EFB) outbreak which was the biggest the UK had ever seen, and we had to destroy 169 colonies that season. It was quite a traumatic event and it affected a lot of people in this area. The truth is, it had probably been around for a while and we hadn't recognised it, because this wasn't a foul brood area and we weren't up to speed with dealing with it.

Since that date that has probably been the biggest cause of our losses because we don't have a huge problem with varroa at the moment. Our treatments are relatively fresh and effective, so in terms of the biggest single incident that caused loss it would be the EFB outbreak which started in 2009 and is still ongoing albeit at a far lower and less damaging level.

Steve: As you were saying earlier when you find it you pretty well "get rid" rather than do anything to treat it.

Murray: There's been many policies about how to deal with foul brood; antibiotics, shook swarms, but our conclusion from several years of experience is that

no solution has a sufficiently low recurrence rate for us to consider it viable, given the investment of time and materials to do shook swarming, for example. It's actually far more effective just to cull the stock, sterilise everything and start afresh.

Steve: That year when you had to destroy so many, in 2009, you still did OK that year?

Murray: It wasn't great. The bees were very disturbed, they were constantly being inspected by bee inspectors and they were unsettled, so it wasn't a great year.

Swarm control

Steve: So, what about the thing that you said needs a book all of its own…

Murray: Swarm control!

Steve: Indeed

Murray: Yes, it does need a book all of its own. There are lots of factors affecting how we do swarm control and as I've said to a number of people, we need the maximum number of stable colonies, where swarm control has been dealt with and the colony has settled down, by the first fortnight in July.

You first of all have to see how many winter losses you suffered and then exploit any swarming colonies to restock your empty hives. What we do is move the hive that is preparing to swarm across the apiary to a vacant spot, and then we put a new hive on the position where it previously sat. Then we take 1–3 frames of brood, depending on how advanced preparations are, and the queen away from the swarming hive and put them in the new hive on the old spot. The swarming hive now has most of the brood nest and the queen cells. You can select a queen cell to keep, you can kill them all and introduce a queen, or you can kill them all and insert a queen cell from a line of your choice. That will make up your winter loss as the queen will emerge, mate and start laying.

The safest thing is to knock all of the queen cells down and come back at the next inspection and knock all down bar one after that. It is the safest way but we need to short circuit that and not waste those two weeks so other ways are less perfect but will produce a stronger colony in time for when we need it.

Steve: OK, anything else?

Murray: Well the next way is you lift the brood nest up above a flying board *[note: this can be a spare hive floor, or one of the various boards such as a Snelgrove board, Horsley board or whatever – basically a board to enable a vertical split].* You put

the queen and maybe only a frame of eggs in the bottom box, then the queen excluder and supers, then the fly board and your split on top, which you then treat exactly as you would in the earlier scenario. You raise a young queen in the top half and the old queen takes about 3 weeks before swarm preparations resume, so this is a process you have to repeat, but it may be that things settle down and you don't have to. Normally when things are going well with that system you have to do a new split about every 3 weeks.

There is a variation called Demaree which is a very old fashioned one but it works.

Steve: So, in your case you are more likely to let them raise their own queen rather than introduce one?

Murray: We are, but only for one reason – we are not likely to have enough mated laying queens ready to introduce to them all. The majority will end up with, not necessarily a self-raised queen, but we keep the queen cells from our better queens and introduce those to the splits. We also take out cases of queens from Jolanta in the breeding unit and we can take them out into the field and use them. So, saying that we let them raise their own is true occasionally, but it's not our method of choice. The methods of choice are to influence the queen that the colony will be headed by.

Then magically we hope it's got to July and they've decided not to swarm anymore.

[break to make a cup of tea]

The thing is with swarm control, there are so many ways. You can remove nucs, rotate brood nests, there's a lot of ways. For us it's determined by how many winter losses we need to make up, and the date. The date is crucial because you don't want to be splitting too late, because then you end up with two small hives at heather time, and you're trying to avoid that at all costs. The decision can be made on the basis of so many factors, the quality of the bees, and it can sometimes come down to, in the end, what we've got left on the truck. If we've run out of equipment we may have to do something completely out of left field. You just have to have a lot of weapons in your armoury to deal with it. The state of advancement of swarm preparations…there are so many factors that you could write a book on it.

Steve: Yes. You were saying that you then take them to the heather.

Murray: Yes. We keep them under control. We use single brood boxes with queen excluders, and we keep that going and eventually we get to the point where they are coming back to strength again but it's within a couple of weeks of them going to the heather. At that point instead of doing anything remarkable

we'll just double the brood nest – give them a second brood box below the queen excluder and let the queen have the run of the place. That tends to stop the swarming, and by the time there's any chance of them coming back to it they are already on the heather, working hard. The heather is hard work for the bees and although you do get heather swarming, it does happen, it's not especially common. It's a pest because you won't get honey off that one, but it's not economic to do anything about it.

On selecting queens

Steve: OK. When we were talking to Jolanta earlier she said that you are the one who selects the queens to breed from, so my question is what do you look for and how do you decide which ones to select?

Murray: A lot of bee breeders have a formal scoring system and they rank certain important properties and give each a score, so that anything scoring below a certain level is never allowed into the breeding process. Our needs are much more basic. We need a honey producing colony and we need the bees to be workable and healthy. One of the properties we look out for is the brood pattern, and fecundity of the queen. You're looking for a solid brood pattern and bees that are steady on the comb and don't run too much, so they are easier to manage, meaning you can run more colonies. You're looking at the honey production, and there are other things like we won't allow a colony with more than a few cells of chalk brood into the process. Ultimately, we would hope to get chalk brood out entirely. We are also trying to choose bees from types that are resistant to EFB because, despite the fact that we are dealing with EFB, and it's not an overwhelming problem for us, it's still there and is definitely linked to bee type. It's not that one bee is immune and one isn't but the degree of susceptibility varies, so we look to breed from stock that has shown itself to be less so.

We buy in breeder queens from other people and we select the best from our own. We keep the good ones from the year before, and from the field where we have 3,000 hives we only need to choose 5 or 6 to go into the breeding program. We can afford to be extremely choosy. "Good enough" is not going to get in; it's got to be something exceptional to get accepted and brought in. They can be rejected on the flimsiest of things, like a couple of bees jumped off and stung me, rather than it being an aggressive hive, but you know, you're going to find one where that doesn't happen.

Steve: It's one of the advantages of being so big isn't it. You showed me earlier on the type of plastic push in cage that you use for queen introduction.

Murray: They are a very good piece of kit.

Steve: Did you do other things before?

Murray: We have experimented but, in the past, most of our introductions were done using the shipping cages. It's pretty successful but the push in cages just give you that 10% extra success that makes it worthwhile. With the value of a home bred queen the cost and inconvenience of using a push in cage is small.

Finding apiary sites

Steve: Right. Next is apiary sites. Finding them. What do you do?

Murray: I've got a strong propensity to go raking about between apiaries, especially if I'm on my own. I tend to gravitate towards larger owners, growers, contract farmers – people who we can get a large number of places from – and then start small and then expand later on once they've got to know us. It's a long-term process to acquire enough good places. At the heather good places are key, and also wintering sites are key. If you take on a poor wintering place you've got just a load of rubbish to work with in the spring, so choice of wintering sites is crucial. The winter sites are the ones I take a lot of time selecting. It needs to get a bit of winter sun, have good air drainage, nice aspect and also a track record. We won't suddenly take a place on the first time and smack 100 hives down. We put a normal sized group in there to begin with, and see how it performs. Then, if it's a good place we will increase the numbers

However, life is full of surprises because some of our best wintering places should theoretically be dreadful. Little boggy patches in the middle of a forest, for example, where people would always expect the bees to die, but they are fine. There are other places with good air drainage which are not very good, but the general rule is: South facing, good air drainage and some winter sun.

Steve: What do you mean by air drainage?

Murray: Cold damp air which forms next to the land, especially in winter, is able to drain away down to the bottom of the valley away from the bees.

Steve: So, it's the dampness that is the problem more than cold?

Murray: Yes. It's a sort of dank penetrating humid cold that comes with it. A long time ago a gamekeeper, who is dead now, was helping me choose a heather site up near Braemar, and he said to me about a site, "I wouldn't put them up there." I was quite young at the time. I asked why not, and he said, "there's the

river you see, and the river you don't." The water is the river you can see, but above these rivers there are rivers of cold air that come off the hills and flow down the valleys. I remember putting some hives where he said to go and some others on a beautiful spot that I liked in a flat dry place. I got twice as much honey where he said to go! It was up the hill and it was windy but lower down they just didn't do so well.

Steve: We talked earlier about the temperament of bees and I wondered at what point you decide that they are too feisty?

Murray: If they are attacking your veil and stinging you when the hive next door is not then that's not good. In some conditions they are all unhappy, but because we have so many hives we can pick out the ones that are really unpleasant. You either re-queen them or just mark them down as unsuitable stock to breed from, and let nature take its course with them.

Steve: What about the optimal number of colonies on a site?

Murray: It's a function of the amount of forage there is

Steve: You just learn that over the years?

Murray: Yes. But oilseed rape, for example; you don't want more than about 1 or 1.5 hives per hectare.

Steve: For the heather I guess you just have endless hills of heather, or not?

Murray: Well there are still places where the forage could potentially be limited and you tend to put fewer colonies there. You know where the forage is unlimited; I mean, we've got places where you could literally put 1,000 hives, but we never do, because if that place fails it's an awful lot of hives to fail. So, we generally don't ever have over 100 hives in any one place, and even that is very rare, it's more usually about 40 on the heather sites. Hence there's 70 odd sites and about 3,000 hives on the heather.

Steve: You were saying yesterday that when inspecting hives they do it quickly, something like 6 minutes?

Murray: Yes, the budget for working on the hives including doing any splits if needed is 6 minutes per hive. That's per beekeeper, so if you've got 2 beekeepers on an apiary with 16 hives we expect them to be done in 48 minutes.

Steve: Right. They just know what they are looking for and work quickly.

Murray: Yes. Some of the quickest workers are people like me and Jolanta. The more experienced people get used to it and are quicker, say about 4 to 5 minutes.

Steve: Does that mean just pulling out 2 or 3 combs?

Murray: You actually learn to just scan. You know for example that if you open

a hive and get empty comb, then 2 or three frames of eggs, and it's obviously an expanding nest, you're not going to have swarm cells, they're just not going to be there, so you don't have to look much further. You then just need to go to the sealed brood, shake a frame or two and look for any duff cells or discoloured larvae, and then put it back together. So, if it's a problem-free hive it might only take 2 minutes but the next one might have queen cells and require splitting, so that one could take 8 or 10 minutes, so the 6 minutes is an average.

Things that matter or things that are changing

Steve: OK, in general in the world of beekeeping, can you think of things that have changed over the years?

Murray: Varroa, varroa and varroa. There are no other threats around like varroa. People go on about tropilaelaps, which would be unlikely to get established in this country, because after a brood free period of 5 days it's all dead. I don't fear the small hive beetle at all because of the needs for a certain pupation soil temperature, and the Asian hornet – let's see what happens. It could become an issue to the mating unit, but everything else is migratory and during the time that the hornets are at their worst the bees will be on the mountains far away. By the time they come back the season for hornets will be largely over.

The big change is varroa, and although honey prices seem quite high they are historically lower than they were 30 years ago, index linked to commodities. The number of colonies you need to run per person today to be profitable is greater today than it was 30, 40 or 50 years ago.

Steve: Is that due to imports of honey from other countries?

Murray: Not especially. Fashions change and the pressure from supermarket buyers in particular keeps the prices down. If you could make a living off 300 hives in the past, you now need 400. Heather honey has gone up in price significantly in the last couple of years in bulk, but it's still something like 20% lower than it was in the mid 1980s.

Steve: How much does it go for?

Murray: £4 per pound in a steel drum. But if you index link the price from 1984 forward it should be about £5.80, so it has lost ground.

Steve: It's funny isn't it because whenever anybody tastes proper natural honey they can't believe how much better it is than some of the stuff you can buy.

Murray: A lot of the supermarket honey is produced from areas where there is



Wood hives with poly feeders

Grafting shed





Ancient Smith hives

a lot of forage but it is relatively nondescript to a British taste. Someone from, for example Argentina will love Argentine honey, but here we will think it's nothing special. They'll taste ours and think it's not nice but we think it is.

Steve: Can you think of anything that may change over the next 20 years in your profession?

Murray: My feeling is that, once economic austerity relaxes, the positive sentiment towards honey bees will result in possibly some rather bee-friendly government policies. We get very little support at the moment but the need for honey bees is becoming clearer and clearer, and what we can do for the world. Nature's pollinators can't do what we can because populations can't respond as quickly as us moving hives for pollination as required. I hope that policies will make it quite a friendly environment for us. I'm actually optimistic about the future. There are reasons to be pessimistic because of varroa and the lack of weapons to fight it, and the lack of will to provide us with what we need to keep our bees healthy, and increasing levels of regulation – these are all negatives that cause us problems – but I think that there are many people who's ear we have. They are likely to produce policies that are friendly towards us, and we could possibly, in 20 years time, be into a golden era for bee farming.

Steve: Which would be nice for your successors.

Murray: Yes, and nice for me to see too, if I'm still around. So, I'm generally positive about the future.

Working with others...and people I admire now

Steve: Yes. Oh, and do you ever meet up with other beekeepers and compare notes? Is there anyone you particularly admire and why?

Murray: Interesting question. The Bee farmers Association in Scotland are actually quite active. They are not a pressure group but we get together and we talk a lot about how things have been, the harvest, where's been good and where's been bad, and all of the problems that face us. So yes, we do get an idea of how well we are doing, and Nationally they have a spring get together down near Coventry where we have talks and a trade fair and conduct the business of the association, and a lot of information changes hands there. There is a lot of networking that goes on, which is good.

In terms of who do I particularly admire, it's hard to say. There are a number of people who I admire in some of the things they do, but not other things they do. I have actually stolen some peoples' ideas. It would probably surprise this guy to know, but there's a guy in Yorkshire called John Whent.

He is quite a large commercial bee farmer, he is the man who has truly demonstrated the concept of making money from bees without packing your honey in jars and flogging your tail around, because he did it in bulk. The model I went on to in the later years, the last 12–15 years, (the bulk only model) was essentially inspired by realising that he was the one guy who had really made a lot of money from bees, and he was the one guy that didn't pack any jars.

Steve: Right, that's interesting.

Murray: He maintained his total focus on the bees, their welfare, and production and didn't get himself side-tracked with customers and packing and things which in some cases are vanity projects.

Steve: It also means that you are focusing on what you are best at.

Murray: Focus on what you are best at, yes. The calculation that he'd have done in the past (he didn't say he'd done it but it was apparent that he had) was that the time taken on these things was not worth it.

Nobody tells you. They say here's a ton of honey you made and next you jar it, and move it around, and sell it for the highest price you can get. You get as far down the chain as you can, to get as close to the retail customer as you can. What this doesn't take into account is, "okay, how much extra time does it free up and how many extra hives can I run in that time?" The extra value in the bulk volume and the bulk price is greater than taking the smaller volume and doing those extra steps. The extra honey will also be at reduced costs because there are a lot of costs involved with taking the stuff to market. Also, you are not subject to the regulations anything like you are further down the line, with constant interference from health officials and so on. When your honey is in bulk the quality system takes place when it gets to the packer. You have to have a tolerable environment but it doesn't have to be the absolute "white tunnel" environment that you need for packing.

Steve: I suppose you don't see your name on a jar do you?

Murray: No, but that doesn't pay the bills! It's another one of those, it's nice to see, but do you need to see it? Not really. That's more to keep you personally happy rather than financially happy.

Things that rile me

Steve: Yeah. What about, to use an awful pun: do you have a bee in your bonnet about some issue right now, something that really bugs you?

Murray: I've always been, and still am, bugged by this assumption that takes

place in beekeeping circles and other places, that the two words "foreign" and "inferior" are interchangeable. This is not just in bees and honey, but also to do with the whole climate around Brexit and things like that, the idea that foreign is bad. When people are like that I do like to point them to a Flanders and Swann episode – a song that they did called "A Song of Patriotic Prejudice" which is absolutely epic. It is guaranteed to offend everybody except the English, and it's brilliant. They have a go at the Scots, the Welsh, the Irish, the Greeks, people who "eat garlic in bed" and, of course, they are making fun of that attitude. I think it's priceless and if anybody has that attitude I point them to the You Tube video.

Steve: OK. If you had a magic wand is there anything you would do to change things?

Murray: Reverse the Brexit result! Probably if I couldn't do that I'd reverse the Scottish independence vote. Actually, that wouldn't be a bad thing at all for me in business because the Scottish government is very "pro bee". They helped us after the hard weather; in 2012 there was a very bad winter and a lot of losses, and the Scottish government helped the professionals in Scotland but the English government declined to do so.

Steve: Surprise, surprise.

Murray: Purely on a selfish level it would probably be beneficial to me. A lot of our product sells because there is a premium over English heather honey, not because it's any better, because it isn't, but because of its provenance. An independent Scotland would be an even higher status of provenance. That's not why I believe in independence though. Since I was about 8 years old I felt I was Scottish, so it's from the heart not from the head.

Steve: Well, you never know, it might happen one day.

Murray: That's that, but in terms of bees and the magic wand, I'd like Jolanta to come up with the perfect disease free, calm tempered queen that guarantees to get a crop in any season when the weather's decent, and doesn't swarm, doesn't cost too much with management problems and if we give it to anybody else the swarms come off and go back to our hives.

Actually, joking apart, we've seen that happen. We've seen our own queens that we've sold turn up in our hives at times. It happened this year in fact. A swarm came into our home base at Coupar Angus with this marked queen in it, it was one of our coloured marks. The next thing somebody came to us and said that the bees we sold them swarmed. I said "well, what did you do with them?" He said he put them in a hive. I asked if he gave them space, and he said that it was just a nucleus. "I told you, in ten days they will need another box." He said,

"I didn't give it one, I didn't think it would need it this year." So it flew away to an empty hive in my yard.

Steve: Yeah, crazy

Murray: I gave him another queen.

Plans for the future

Steve: OK. What about plans for the future? You have expanded a lot, even in the last few years, haven't you?

Murray: The biggest issue facing us at the moment is that we've hopelessly outgrown our premises. They are not in the best of repair but I don't want to spend too much money on them because we're actually planning to move. We've got a new site identified and agreed with the owner. The fact that our existing premises are outgrown and the yard needs a lot of work done on it is something that I'd rather not do if I don't have to. In the medium term we will be building a far larger bee farm. Once that's built it takes the space constraints away, and the scale we can go to. The new place will be 5 times the size that we have now with almost infinite scope for adding extra bays onto the shed, which is not that expensive. From that point on we can start to move forward in whatever way the market leads us, consistent with the family being willing to take it forward themselves.

There are a lot of ways in which we could expand if we want to. We need the space and the capital, so the bees have got to earn a fair bit first, and then we build the new bee farm and take it from there. There's no point just expanding exponentially if there isn't a market for your product. It has to be market led.

Steve: Your family is quite involved then?

Murray: All but one are involved to some extent. My eldest son is in physics and electronics working on radar systems, but he's very switched on and will come over to help with the "business" side of the business. My daughter is very good with the bees and that side of things, and she will take over the management of the bee unit once I feel ready to step aside from that, and of course my second son is very good with mechanics and looks after all the trucks and machinery, so he can carry on with that. The future in that respect is quite secure.

I've got a youngest one who may or may not want to come in. The second youngest daughter is a professional nurse so I don't foresee her coming into the business at all, but the choice is hers if she wants it. I have two grandchildren who my daughter would like to come along after her.



Hives near Newtonmore

Steve: It's going to go on and on

Murray: Hopefully it goes on and on

Steve: What do you do outside of the bee season and where do you go for your holidays? Or is that "not applicable" given what you said earlier about hours?!

Murray: It is a "not applicable!" As I said to you last night I've had 3 holidays in 35 years and they don't add up to 3 weeks between them, and I hated all of them to some extent because they took me away from what I like most. They take me out of my comfort zone, and they make me stressed. I don't really want to go on holiday. It gives me a lot of issues because people would like to go on holiday with me; my children and friends, and they think there's something wrong with them that I don't want to go. It's not that at all, I'm just doing what I love so why would I want to go away from it?

Steve: You are very lucky in many ways

Murray: Very lucky. Normal rules don't apply. I'm doing what I love, I love what I do and if I was offered holiday I'd probably go and look at bees.

Steve: And your favourite honey, you said, was bell heather?

Murray: Bell heather, without a doubt. My favourite honey of all the ones we produce is bell heather. There are some other beautiful honeys produced around the world, not necessarily the UK, and I have tasted some honeys that are absolutely glorious, and some that are utterly disgusting. But, of all the honeys that we do my favourite for flavour and taste and smell is bell heather.

Steve: What was the one I tasted?

Murray: The one you tasted was ling heather.

Steve: That was good.

Murray: I like lime as well. It's another very nice honey that we get. We don't get huge quantities of it, just a little bit, some summers.

Bee keeping philosophy and innovations in design or approach...

Steve: Have you ever invented or designed anything that you use in your business that you couldn't buy anywhere? Actually, I've seen one; your 4 drills in a row for making wire holes in frames.

Murray: Yes! It's not so much that we invent things, but we adapt things. I'll steal good ideas from anybody and we'll put them together in ways that are not quite the same as other people have done. The thing that springs to mind, it's nothing radical, but for moving polystyrene hives long distances you require travel screens. But you also need to stack the hives up on a truck. You need to put them one on top of the other which then blocks off the travel screen, so we've got these weird shaped travel screens that I designed myself. They have a large area for bees to cluster in underneath the screen, and then I've got these weird four pieces of wood on the top, that stick out further than the screen. The two middle ones are lower and the two outside ones are higher but have got notched corners. They are to engage with the floor of the hive above, so that when the floor of a hive above locks onto it the stack doesn't slide. They are locked in position, and you've got air channels through the load to take the air away. The number of people that have taken them away to copy them…so that is one that I designed myself.

Steve: You haven't patented it then?

Murray: Ah no, it's not a patentable idea. Even if it was I wouldn't make money off it so it's not worth the effort. We just let people copy it and get satisfaction from that. A guy in Spain who was selling bees to the north of Europe actually used some of them and successfully moved hives in 40°C, in Spain, and drove them all the way to Finland, and didn't lose any.

Steve: That's amazing isn't it?

Murray: It's quite good, and gratifying that it worked as well as that.

Steve: I think I've asked everything I was hoping to ask

Murray: Oh, it's amazing that we got through your list so quickly.

Steve: I've got one slightly corny one, which you may not be able to answer, but is there something in a nutshell that you could say about your approach to

bee keeping? Is there a particular philosophy or "the Murray McGregor way" of doing bee keeping? What's it all about?

Murray: It's a difficult question but when it comes down to a philosophy about bee keeping, it's that the best way to keep bees is the way that the bees would like to be kept. An awful lot of people are guilty of anthropomorphic thinking about bees – they have their own belief structures so therefore they will keep their bees that way, be it to do with organic or natural or whatever. Some people do homeopathic bee keeping…The thing that will tell you how bees like to be kept is the bees themselves. We think that we need rest, we need holidays, it's good to have quiet times, but bees don't like that. Bees like to be working. When there's nectar around and the weather is fine the bees go at it hammer and tongs all day.

You have to recognise that they are not being forced to work. They work because they want to. They breed when they want to, they swarm when they want to and you have to work with the bees' system and not against it. As soon as you are fighting your bees you are not getting the best out of them. You are always trying to exploit the bees' natural urges to do what they want to do, and go with the flow of the bees, and channel them in the way you want rather than regard bee keeping as an exercise in mastering control. That's just not the way to get the best out of them.

Steve: No

Murray: It's the same with people. A lot of people say that I am very soft with my staff but I get a lot out of them. I see good aspects in them and I see weaknesses, and I prefer to focus on what people can do well for me rather than obsess about their faults, and try to treat them well. All these people who have come to work for me, young kids from Eastern Europe and things like that; the way I treat them is to think how I would want my kids to be treated if they were away from their country. I get enormous reward from it, and they never leave!

Steve: Is there anything else you'd like to say?

Murray: Well it's almost impossible to get who we are and what we do into a short piece, so be sure to email me for any clarifications you need or perhaps I can explain things in a more clear way. You've seen a lot today, and you have probably realised that what looks like a relatively simple business is actually quite complex.

Steve: It's been a privilege, for sure. Thank you very much.

Murray: Remember, you'll not get any bullshit, or lies, and no subject is off limits.



Twenty three tonnes of heather honey in barrels.

Steve: Apart from perhaps that estate up the road?

Murray: Oh no, the fact that we are on that estate is not off limits. It's no secret. Anything that goes on with the family, behind the gates, that is off limits, but the fact that we go there is not. It's been on the Duchy Originals honey jar label for 25 years so they've been quite happy for it to be common knowledge. The status that sometimes gets assigned to me, the Royal Beekeeper, was not my invention. They are my bees on the Royal land; I'm not keeping the Royal bees. I never was.

That issue with the antibiotics

Steve: The worst thing about the media is that if I google your name the first thing I'll get is a page of stuff about the Royal Beekeeper being taken to court or something.

Murray: Oh, that was the antibiotics thing.

Steve: It's incredible that of all the things that could come up it's always that – it's just the way it works.

Murray: The interesting thing about that was that some newspapers printed the whole story but some did not, and just printed alarmist stuff. The truth of that was that a European foulbrood outbreak came along and we'd had a big meeting with

officials, and it was discussed that we were going to treat the bees with oxytetracycline to stall the outbreak until we could get it properly dealt with. There was no schedule given; we were supposed to be getting the supply from the Government, and I was on such a scale and so dependent on things that I couldn't wait, I had to deal with it. They finally delivered it sometime in October; we needed it in August!

I bought a private supply. I secured exactly the same stuff privately, prepared it in line with best practice. What they don't tell you is that I made the contacts with America, I had done the research for them, I had prepared a document with all the application protocols and the way it should be done, collected from best practise in North America, and I taught the Scottish Government official in charge of it how to do it. I then had to attend a training course where he trained me! I did all that, I sourced the product for them, I found a supply and gave them all of the details, and they had a paperwork problem. They had to go somewhere else. I used the approved medication and they ended up using a non-approved medication!

If it had been left to the Scottish authorities this would never have happened, but somebody down in England said, "Oh, he's using oxytetracycline which he got without a prescription – sue him!"

Steve: Right.

Murray: That's what it came down to. I fought them a bit and got it toned down a lot but…the Press report afterwards didn't report what the judgement was, they reported the original charges but actually most of that had been chucked out. I got a moderate fine for buying it and possessing it, and I got no fine at all for using it. The judge said in the court, "this is a red tape offence." To read the press reports you wouldn't think so – you'd think I'd been selling toxic honey or something like that. Nobody cared about the judgement at the end. He said he had to fine me because I technically was guilty and I pleaded guilty, but he said it was a red tape offence.

Steve: How long did that go on for

Murray: Four and a half, five years.

Steve: Oh dear.

Murray: More than that. The final verdict was in 2017, and it was a 2009 event. They asked me about my use of oxytetracycline and I told them that it was both a government supply and a private supply, and I produced the documents and showed them the invoice from America, so I gave them the information myself. But they actually ended up turning me into more of a folk hero figure locally, rather than a villain. I now get so many calls giving me information and asking for advice, it's embarrassing.

Steve: If it took so long it must have been stressful?

Murray: It became stressful just a few months before, when the court papers arrived, but even then, I just got my lawyer on the job. I produced lots of evidence and was able to prove that some of the stuff written by the people preparing the charges was actually outright false. It didn't stop the press regurgitating it, because it was on the original list of charges submitted by the court. A lot of it was absolute nonsense.

I was able to get enough to treat every hive in the outbreak for $320. The Scottish Government's treatment cost £20,000. Outrageous. Such a waste of taxpayers' money.

Then they tried to get me for a non-approved varroa treatment. That got kicked out quite quickly because it was given to me by a bee inspector, as a gift! He was a bee inspector in England. He came up to Scotland in his DEFRA van to do some private shooting, and he must have had 5,000 strips of this stuff in the back of his van, so when they found out that led to a quick dropping of charges.

They should have dropped the lot because it didn't do them any good in the end, and despite these searches, it's done me no harm whatsoever.

Steve: No. Well, that's because any reasonable person whose livelihood depended on bees wouldn't have had any choice; you either let your bees die or deal with it.

Murray: European foulbrood was spreading like wildfire and we needed to get it under control before we could really deal with it. We were getting into a time of the year where it wasn't symptomatic anymore, because the brood was finishing off, so you couldn't diagnose, but there was still drifting taking place between hives, so it was still spreading around. What we did was to arrest the spread.

Steve: Then the next year you had to destroy a lot?

Murray: Well it wasn't nearly so many because we culled the biggest number that year. The number that showed up the next year was not huge. It's stayed relatively low ever since. I think this year we had 38, but compared to 169…and it's 38 out of a higher number of hives. If it was the same number of hives we'd be looking at about 18. We have got more and more hives since then, and will continue to have more.

Steve: OK

Murray: Is that you done?

Steve: Yeah, thanks very much.

Afterword

It was a privilege spending time with Murray McGregor. I also gleaned a few other nuggets of information not covered by the interview which I am happy to share.

Murray uses polystyrene feeders on the top of his hives, even the wooden ones, because they provide excellent insulation over the winter. These are the feeders that cover the whole area of the top of the hive and can hold a lot of sugar syrup. His hives come back from the heather late in the season and have to be treated for varroa and fed. What Murray does, and I have not seen this anywhere else, is to use this late season winter feeding as an opportunity to get new frames of foundation drawn. This is how he described it:

Murray: You can get three frames of foundation drawn dead easily in autumn, even five. Take out the combs you wish to replace and shake any bees off and set aside. In the MIDDLE of the colony insert the frames of new foundation, never two together, so they are interspersed with brood frames like (O for old, N for new) OOONONONOOO, assuming eleven frames. Feed the bees a full winter feed and check what has happened to the foundation a few days later. In September it is normally perfectly drawn and there will be lots of eggs and young larvae in the centre of the combs. In October it might have less or no brood.
The big advantage of autumn comb replacement is that they are always perfect. There is no drone rearing at that time of the year so the combs are drawn 100% worker. You won't find that in any text book!

Another practice that I found interesting was what Murray does when uniting two colonies. He does not use the newspaper method but instead sprays the top of one box and the bottom of the other box with air freshener, then puts the two together. Unless there is a good reason he leaves both queens alive, allowing nature to take its course. He said that when uniting a split (in which a daughter queen was raised) back to the original hive, by the spring they find the young queen in charge 80% of the time, the old queen 15% of the time and both 5% of the time. Having two queens in a hive is much more common than many beekeepers realise.

Finally, many beekeepers in the UK today are taught to replace comb in their hives very frequently because apparently dark comb is a terrible thing. In fact, this is not often the case. One practice that is gaining in popularity is that of

carrying out a "shook swarm" on a colony in spring in order to get all of the combs changed at once. The professional beekeepers that I have spoken to about this, including Murray, say that this is very definitely not something that they would do in their hives. At the time when you want your colonies to grow rapidly through spring in order to be strong for the honey flows the idea of shaking all of the bees onto foundation frames and destroying their brood is anathema to the people that I have interviewed. Shook swarms are sometimes used when European Foul Brood is found in the hive, although Murray, who has lots of experience of that disease, prefers to destroy the colony. In his experience EFB keeps cropping up even if you do carry out shook swarms.