



Eva Crane Trust

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II. STATES OF THE SOUTH AND WEST

CALIFORNIA

On the morning of April 16th we set off north-west towards Sacramento and Davis. Dr. Laidlaw had brought with him Mr. and Mrs. Collins (Mrs. Laidlaw's parents), and Dr. and Mrs. Amaral from Piracicaba in Brazil and their little daughter Norminha. These were my companions for the next few days, and a very happy party we were.

I gave a lecture to the Imperial Valley beekeepers at Holtville that evening, and I began to realize the enormous gulf that separates European beekeepers from those of California. I do not think anyone at the meeting had less than 1000 colonies, and many had 10 000 or more. The apiary is the working unit, not the hive, and I realized that the behaviour of the individual bee must seem a microscopic and insignificant phenomenon to these people. The California beekeepers have worked out a system of migration for their apiaries, which gives the bees flow after flow to work, cuts out swarming and gives an average honey yield of 50-90 pounds per colony, and also fees from pollination ; besides this a quarter of a million queens are reared and sold in California each year, and half as many packages of bees. California produces as much honey as Britain, Switzerland, Belgium, Netherlands, Denmark, Norway and Sweden together, but with less than half as many colonies and only one beekeeper for every fourteen in the European countries.

From Imperial Valley we went north-west, first through more hot desert, and then through attractive hilly country, mostly covered with black sage, one of the most famous honey plants of the Pacific coast. It was in flower, with apiaries of bees working it. Soon we found ourselves in the citrus area, and here we visited Mr. Jim Huston, a commercial beekeeper living about 60 miles east of Los Angeles. Mr. Huston works 5000 colonies, and has four men to help him ; he reckons that one man with a truck can deal with a thousand colonies. As far as I know his system of migration is typical of those used by other first-rate commercial beekeepers in this part of California. His colonies are brought home in January to build up on the pollen in the neighbouring uncultivated hill country, chiefly wild *Ceanothus* and oak. However in February 1200 go to northern California to pollinate almonds, and these are moved on to work the manzanita there (*Arctostaphylos*). On 1st April all colonies are moved to the citrus, except for 800 put on black sage (which I had seen). In mid-May they go north to the San Joaquin valley (page 278) to pollinate lucerne, and they also work wild buckwheat (*Eriogonum fasciculatum*) and sage.

Then on 15th July they are taken further north to the cotton. He gets about 80 pounds of honey per colony, plus his pollination fees.

Mr. Huston took us to see some of his apiaries in citrus groves ; there were lemons as well as oranges, and the trees were a magnificent sight, full of ripe fruit, and at the peak of their flowering too (see page 249). We also went up into the hills, to an apiary shaded by eucalyptus trees on the spur of a hill : it was a lovely spot. But the ground in front of the hives was covered with dead bees, from parathion sprays on the citrus below.

We spent two days in and around Los Angeles. We visited some of the largest honey-packing plants in the U.S., Superior Honey Company and the Anaheim plant of the Sioux Honey Association Co-operative. Sioux is the largest honey-handling concern in the U.S., with six plants which together handle about 10 000 tons a year — a tenth of the U.S. honey crop. We saw not only honey processing and bottling, but also the preparation of chunk honey, honey jelly, peanut butter and honey spread, and foundation and candles. I also lectured to the Central Valley Beekeepers' Association after an Association dinner at Knott's Berry Farm ; this was a meeting I enjoyed greatly. Mr. R. R. Reed, Vice-President of the American Beekeeping Federation, made me very welcome, and among the many others I was happy to meet were Dr. S. E. Flanders [*A.A.* 114/51] and Dr. C. R. Kellogg, recently retired from the Mexican Department of Agriculture.

I was not sorry to leave Los Angeles and the hundred miles of built-up area and fast traffic which surround it. We went north, through Hollywood and Beverley Hills, and then over the Tehachapi Mountains — lovely with bluebonnets, Californian poppies and other flowers in bloom — into the San Joaquin valley. This is part of a great plain whose river reaches the sea to the north, through a gap in the coastal ranges at San Francisco ; the Sacramento valley is the northern part of the same plain, draining to the south, also into San Francisco Bay. This great plain is dry, but by irrigation an enormous fertile area has been produced, where many of California's fruit, nut and seed crops are produced. There was little for us to see, but in the summer a single farm will hire 15 000 colonies of bees to pollinate lucerne seed (see page 277).

I gave a lecture in the new State College at Fresno. We found Professor J. E. Eckert waiting for us there ; he steered me through a television programme, and later I stayed with him and Mrs. Eckert in Davis. This is the home of the University of California campus where the bee work is done by Dr. Eckert and Dr. Laidlaw, Mr. Lee Watkins and their students.

Dr. Laidlaw is well known for his work on instrumental insemination of queens. He showed me his bee-breeding programme in operation [*A.A.* 50/51, 82/55, 338/57] ; this is an enormous undertaking, and he badly needs more staff to help him. I also saw the mutations they are using : snow, cream, chartreuse (and brown, a modifier of chartreuse), red, brick (all eye colours); reduced facets; short wing, wrinkled wing [*A.A.* 34/56].

Dr. Eckert's researches have covered a very wide range of subjects ; he is especially well known for his work on the sulpha treatment of A.F.B. [*A.A.* 29/54, 100/55], and I was very pleased to be able to see his experimental colonies, with Dr. Eckert himself applying terramycin to the combs. He also took me to visit a commercial beekeeper, Mr. Jim Wing, son of one of the pioneer queen breeders of California. This was the

package-bee season, and Mr. Wing was trying hard to catch up with his orders ; however he found time to show us some of his bees, which he operates on a ranch of 18 600 acres. Mr. Wing's mating apiary was in a lovely glade of trees which had been left standing in this enormous cultivated area. Dr. Eckert knew his birds (how few beekeepers do!), and he showed me the local species of quail, magpie and flicker, and many more.

I gave a lecture in a beautiful auditorium in the University, but the package-bee season greatly reduced the audience. Mr. and Mrs. Harry Whitcombe, well known through the book *Bees are my business* [A.A. 267/55], somehow found time to come ; they went off immediately afterwards to load package bees on to a train. There is terrific excitement when the package bee season is on. So much has to be done quickly, so much is dependent on the weather, and these thousands of colonies sent north represent the culmination of months of work and effort.

Before I left California I saw many other things which are no part of the bee story : Disneyland, Palm Springs — the desert resort favoured by the rich of Los Angeles — and groves of date palms ; the Yosemite valley in the Sierra Nevada, surely one of the most beautiful spots on earth ; giant redwoods, and acres of wild *Ceanothus* in full flower, blue and white ; the Golden Gate Bridge and San Francisco ; I had never seen a city in such a beautiful setting, with the Bay and the Ocean, and range upon range of surrounding hills.

OREGON

Professor Eckert had kindly arranged for me to see something of Oregon on my way north to Washington State. I flew north across the head of the Sacramento Valley, alongside the volcanic Cascade Range, with two brilliant white conical peaks seen against a clear blue sky : Mount Lassen, which last erupted in 1927, and Mount Shasta, 14 000 feet high. North of the watershed was another valley, draining to the north at Portland. At Eugene I found Dr. H. A. Scullen and Dr. W. P. Stephen waiting for me — the past and present professors responsible for the teaching of beekeeping in the State College at Corvallis. Dr. Stephen apologized — quite unnecessarily — for his handsome beard ; Corvallis was due to celebrate its centenary in June, and all men in the town had been ordered to grow beards. (Dr. Scullen had bought himself a badge which exempted him from this obligation.) Dr. Stephen and some of his medical colleagues are carrying out carefully planned experiments on the effects of honey on arthritis, following up the work done in Corvallis by Julia Church [A.A.221/55].

It was a clear, sunny day as we drove on from Corvallis to Portland down the valley of the Willamette River, and I soon fell in love with Oregon. The change from California was striking; here it was already a northern country, with dark Douglas firs and birches in fresh pale green leaf, and vivid green grass and clear blue water. And the dandelions ! I had never seen so many and could well believe that they are important for the spring build-up of colonies here [A.A.125/51]. The dogwoods (*Cornus*) were in full flower and quite beautiful — some flowers 5 inches across, and the trees looking creamy white all over.

In Portland some of the beekeepers entertained me to dinner, and I very much enjoyed my contact with them. The restaurant was high above the city, and looking out of the window I could see how beautifully it was situated. Beyond it was the great Columbia river, and beyond that again

Mount St. Helens. Mount Hood was much nearer, and stood high above the evening haze, flushed with pink in the light of the setting sun.

I lectured that evening in a public hall, and as I got up to speak I was presented with a beautiful bouquet of red roses 'a gift from Portland, the city of Roses'. The beekeepers were mostly hobbyists — again a contrast to California — and I almost felt that I was back in Europe.

Next morning some of these friendly beekeepers took me to see the Columbia gorge. Mr. Holmes and Mr. Bunnage had spent their lives in the salmon fishing and lumbering industries, and I learned a lot from them about these two great industries of Oregon.

WASHINGTON STATE AND BRITISH COLUMBIA

From Portland I flew to Seattle, 200 miles further north, and again I seemed to be immediately surrounded by friends, who could not do enough for me : Mrs. Dahl, Mr. and Mrs. Bundy, Mr. and Mrs. Ross and Mr. Hundsdorfer, and many other beekeepers. They took me to dinner at a restaurant on the waterfront ; here the view was over Puget Sound to the mountains of the Olympic Peninsula. Everywhere one went in Seattle there was a different view over water and mountains, and it seemed to me that Seattle was in an even more beautiful position than San Francisco. But Seattle definitely belongs to the north. It is the port for Alaska, and I heard so much about Alaska during my time in Seattle that I became fired with the idea of going there one day. There is not a great deal of beekeeping in Alaska, but the long hours of summer daylight enable the bees to produce enormous honey crops.

The country I visited round Seattle was beautiful, with many Indian place names — Snohomish and Skykomish, Issaquah and Snoqualmie. Here, as in Oregon, I realized that the pioneering days are not yet over ; Mr. and Mrs. Ross had recently trekked 3000 miles across from New England, and the Dahls were giving up their present home and work in order to start up as beekeepers in another district. Altogether I found Seattle an exciting and stirring place.

I did my television and newspaper interviews and lectured at the University, and then moved on north to Snohomish, to stay with Mr. and Mrs. Howard Graff. Mr. Graff was very busy moving bees for apple pollination ; this was one of the things I had come to Washington to see, and I was as fortunate here as with the citrus in Florida, for when I reached the main apple-growing area in the Yakima Valley a few days later, the blossom was at its peak.

Mr. Herman Menke had very kindly arranged with the Canadian beekeepers for me to visit British Columbia before meeting him in Yakima. So, after visiting Mr. Graff's up-to-date honey plant in Snohomish, I set off with him and his family for Vancouver. A trip to Canada was a treat to all of us — and what a wonderful reception we had there ! First there was a lunch party at the Birds' house, with a table so beautifully and bountifully spread with food that it seemed to have come straight out of a glossy magazine. Afterwards we drove along by the great Fraser River to visit the laboratories of the British Columbia Research Council, which fulfils a function similar to that of the D.S.I.R. in England. Dr. Harris, the Professor of Horticulture, then took us round the University of British Columbia ; it is built on several thousand acres of land at the very tip of the Vancouver peninsula, which were bought for the University by some far-sighted person early in the century. Never was there a more attractive

site for a University ; it is surrounded on three sides by water, and looks over to the hills of Vancouver Island and the mainland to the north.

We went on to the Pacific National Exhibition, a series of permanent exhibition buildings, of which the Canadians are justly very proud. I had only time to see a fraction of what was there, but it was to me a most interesting and exciting glimpse of the 'north-west': beautiful Indian work, displays showing gold and uranium mining, lumbering, big game hunting and the salmon fisheries — for the Fraser is the greatest salmon river of all. And beyond British Columbia are the North West Territories, Yukon and Alaska. . . .

Before my lecture that evening there was a banquet in one of the Exhibition Buildings. Never have I had such a reception as these Canadian beekeepers gave me, and I realized perhaps for the first time how much the British Commonwealth can mean to its members.

At the banquet I was able to thank the Canadian Beekeepers' Council, through Mr. Wilkinson, one of the British Columbian representatives, for its constant help to the Bee Research Association. Next year is the centenary of British Columbia, and the Canadian Beekeepers' Council will hold its annual meeting there. How much I should like to go, to see more of these Canadians and their stimulating country.

I had another whole day in British Columbia. First Mr. Bird showed me round the fine modern plant of Hodgson Bee Supplies. Then I set off with Mr. Corner, the Provincial Apiarist, and his small son Garry (who spent every waking moment impersonating a cowboy), and Mr. John Stan, a beekeeper of Ukrainian extraction. They took me through 400 miles of the Province, which was however only a tiny section of Mr. Corner's territory ; he drives 20 000 miles or more every summer visiting his beekeepers. We went up the Fraser Canyon, through gold-panning settlements with the most expressive names — Hope, Spuzzum and Boston Bar.

It was lovely, wild country all the way, with snow on the tops and then firs and pines, and western red cedar, and birches, poplars, willows and maples near the river. This is the great home of western red cedar (*Thuja plicata*), the wood used widely for hive making, because of its lightness and resistance to decay. There was plenty of bee forage too ; one sight I shall never forget was the saskatoon (*Amelanchier*) — bushes of great white flowers covering the hillsides. I was interested to see a number of our cultivated garden species in their native habitat on the north-west coast : flowering currant, Oregon grape (*Mahonia*), bleeding heart (*Dicentra*), sumac, *Philadelphus* and many others.

Then we turned east, and were suddenly in the rain shadow of the mountains bounding the gorge, and it was dry with little but scrub on the mountain sides. We slept that night just north of the U.S. border, on the edge of the fruit-growing area which extends south down the Okanogan valley to the Columbia River. Our kind hosts were Mr. and Mrs. Boon (descended from Daniel Boone), who combine beekeeping with apple growing for their livelihood. I did not see what a lovely place they lived in until daylight next morning. It was a valley full of orchards in bloom, with snow-capped hills on each side.

Next day we crossed the border between Canada and the United States, and drove on south through Washington State to Yakima. The whole way was beautiful — sometimes through flat fertile irrigated valleys full of fruit blossom (apples, pears, apricots, peaches), sometimes over

mountain passes, or by the Columbia River. And the spring flowers were out in all their glory ; in places the whole hillside was like a rock-garden full of flowers, from the showy yellow sunflowers (*Balsamorhiza*), to the tiny delicate shooting stars (peacock, or soldier's cap, *Dodecatheon*) which Mr. Stan knew where to find.

I was interested to see advertisements in Wenatchee for Mr. L. C. Antles' pollen ; he runs a firm called Fruit Tree Pollen Supplies Co., and must be one of the very few people who handle pollen commercially as a profession [A.A.227/52, 227/56].

At last we were in the Yakima valley itself, the largest and most famous apple-growing area. I found it difficult to realize that the west coastal region round Seattle and this hot dry fruit-growing area were both part of Washington State, separated only by the Cascade Mountains. In the coastal belt the climate (and bee forage [A.A.30/53]) are much like those of the western European seaboard. But inland it is entirely different, and the hot dry summers provide ideal conditions for the two million apple trees grown there. It is here that the commercial beekeeping is carried on, and that 25 000 colonies are moved to pollinate the fruit blossom [A.A.26/50, 192/51, 59/53], and more to other crops [A.A.103/56].

I lectured that night in the town of Yakima ; as in Florida and California, I had arrived at the very height of the beekeeping activity, and many beekeepers were away moving their bees. Mr. and Mrs. Purchas kindly invited me to stay with them ; they had a real ' picture window ' through which one saw Mount Adams, another of the snowy volcanic peaks, framed in apple blossom. Next morning a party of us set off to see the blossom and the bees working it ; we took a reporter with us, to get a story of the part bees play in pollinating fruit. It was like a day in fairyland—acre upon acre of blossom of slightly differing delicate shades. And what a scent that blossom had ! There was so much blossom that many of the farmers were deciding to use thinning sprays ; these do not normally harm the foraging bees [A.A.151/51].

The commonest variety of apple was Red Delicious, which is self-sterile and very unreliable in setting fruit [A.A.65/56] ; here each tree had a branch of Golden Delicious grafted on, so that the bees could cross-pollinate it. Asparagus was grown under the apples ; unlike most American crops, it seemed to be collected by hand.

I stayed that night with Mr. Herman Menke and his charming French wife and lively family. Near their house I was able to see something of the alkali bees (*Nomia melanderi*) which Mr. Menke, Dr. Bohart and others have shown to be so important as pollinators of lucerne [A.A.26/50, 106, 107/53, 103/56]. It was too early to see the bees themselves [A.A.40/57], but we dug up prepupae in one of the nesting sites, an area of alkaline waste ground just above the lucerne fields ; on Mr. Menke's advice the farmer keeps it irrigated, so that the bees can flourish and multiply.

UTAH

On April 29th I left the apple orchards of Washington State, and flew a thousand miles south-west, across the high plateaux separating the coastal ranges from the Rocky Mountains, which form the *eastern* edge of the great mountain chain. I stopped short of the Rockies, in Utah, to see the Legume Seed Research Laboratory there ; it was the only U.S.D.A. Bee Culture Laboratory I had not yet visited.

I found Mr. W. P. Nye waiting for me when I left the plane at Ogden, and we soon covered the fifty miles north to Logan. This town, besides being the home of the State University and the U.S.D.A. Bee Culture Laboratory, is one of the great centres of the Church of the Latter-Day Saints (Mormons), and my first impression of Logan was of the floodlit temple and tabernacle. As usual, I had to wait until the next morning to see my surroundings. Logan is in a magnificent situation at the head of the Cache Valley (almost on the Idaho border), which was once covered with a great fresh-water lake. The lake gradually dried out and shrank in size, until now only the Great Salt Lake remains, together with a flat valley about 4500 feet above the sea, with mountains on three sides which go up to 10 000 feet. The mountains seems to come right down to the edge of Logan itself. I was very envious of the people here, who work only a few minutes away from high, wild mountains. Spring had hardly come to the Cache Valley yet, but the willows were out, and the apricots were just coming into bloom.

The Bee Laboratory was in the charge of Dr. G. E. Bohart, who has since moved to the headquarters of the Bee Culture Research Branch of the U.S.D.A. in Washington. Dr. Bohart's work has been concerned mostly with wild bees [A.A.14/50, 56/51, 3,209/53, 69,140,161/55, 5,6,40/57], and so has that of his colleagues. Dr. M. D. Levin has also studied the collection [A.A.60/57] and selection [A.A.52/57] of pollen by bees, especially in relation to lucerne pollination [A.A.19/57]. His use of *Osmia* for the biological assay of pollens has been published recently in *Bee World* 38(9) : 221-226 (1957). Both radioactive tracers and cordovan pigmentation are being used as markers to study the foraging behaviour of bees in relation to pollination.

Mr. W. P. Nye, in addition to experimental work, has specialized in close-up photography of bees [A.A. 233/57], and many of his excellent photographs are on display in the Laboratory. In almost all bee laboratories in the States, I could not help noticing the lack of *assistants*, and what a great handicap this is to the research workers. (The reason for this state of affairs is that it costs almost as much to employ an unqualified assistant as a graduate.) However in Logan I found Mr. Nielson, known officially as a 'biological field aid', and it was very clear how much he and his services were valued by the rest of the staff.

I also met Professor G. F. Knowlton of the Entomology Department of the University, well known for his work on bee poisoning [A.A. 9, 11, 120/50, 16, 49, 247/52], and Dr. M. W. Pederson, an agronomist interested in the pollination of seed crops by bees [A.A. 47/50, 180, 225/52, 78, 86, 140/55]. Through no fault of his own, Dr. Pederson was a great disappointment to me : throughout both my journeys in the U.S. I had wondered why it was that I found only *men* doing bee research, whereas in Europe there are nearly as many women as men. I had therefore been very pleased at the idea of meeting Dr. Marion Pederson ; however my one woman bee research worker turned out to be a man after all.

Outside the University I saw the seed plots and the apiaries, one with as pure Caucasian bees as I had seen anywhere in America, and another in a magnificent position on a mountainside overlooking the Great Salt Lake. In another of the steep mountain valleys, we visited the *Osmia* nesting sites, and also saw the local species of loco weed (*Astragalus*) which has the peculiar property of concentrating selenium from the soil,

and is consequently poisonous to cattle, and its pollen and nectar to bees.

From Logan I had a 24-hour journey by train, crossing the Rockies into Colorado (see page 231). As I settled down to sleep that night (May 1st) I marvelled how clear the stars were in the rarefied mountain air — all except one in the north, which seemed to have a tail. When I heard from home next day, I realized that I too had seen the comet.

This completes the account of my travels except for Cuba and Mexico, and I should like here to thank those who kindly lent me slides to illustrate some of my lectures—Dr. M. Lindauer, Dr. F. Ruttner, Mr. W. Wittekindt and Mr. A. Worth — and also Mr. E. F. Woods for the use of his Apidictor, and his records of sounds made by bees, which aroused much interest wherever they were used. I also wish to place on record my appreciation of H. B. Lovell's *Honey plants manual* [A.A. 417/57], which I carried everywhere with me, and which was a most useful source of rapid information on the bee plants I encountered.

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Correction to p. 233 : Dr. Haydak's pollen substitute contains also 1 part dried brewer's yeast.