REMINISCENCES

D. S. Falconer

The Harbour, St Andrews, late 1930s

Introduction

My father, Douglas Falconer, Professor of Genetics at the University of Edinburgh from 1968 to 1980, recorded these reminiscences on tape in the year 2000, at a time when his failing sight made it impossible for him to write them down. After the tapes had been typed out for the first time, with help from the Genetics Department, for which he was very grateful, he added a brief introduction stating:

> 'I recorded this at John's request, so it is written primarily for him. I have included only what he wanted to know and what I thought might interest him. Margaret corrected my many mistakes and omissions of things I had forgotten to say.'

This is dated November 2000. Since then I have made minor editorial corrections to the text, divided it into chapters and added a few footnotes and some illustrations from his archive. The early photographs up to 1924 were taken by his mother Lillias or her family, and most of the later ones by Douglas himself. Readers mainly interested in his professional life should go to chapters 8 and 9. Fuller accounts of his scientific career can be found in the obituaries written in 2004 by Professor John Bowman for the Royal Society[1] and Professors William Hill and Trudy Mackay for the periodical *Genetics*.[2] William Hill also wrote an appreciation for the Royal Society of Edinburgh.[3] An account of the early days of the Institute of Animal Genetics in Edinburgh is given in an article which Douglas wrote in 1993.[4]

John Falconer,
Edinburgh, June 2022

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[1] J. C. Bowman, 'Douglas Scott Falconer' in *Biographical Memoirs of Fellows of the Royal Society,* (2005) **51**, 119–33. https://royalsocietypublishing.org/doi/pdf/10.1098/rsbm.2005.0008.

[2] W. G. Hill and T. F. C. MacKay, 'D. S. Falconer and Introduction to Quantitative Genetics' in *Genetics*, (2004) **167** No. 4, 1529–36. https://www.genetics.org/content/167/4/1529

[3] https://www.rse.org.uk/cms/files/fellows/obits_alpha/Falconer_DS.pdf (all accessed 19 Jan. 2020).

[4] Douglas Falconer, 'Quantitative Genetics in Edinburgh: 1947–1980' in *Genetics* **133**: 137–142.

Douglas' mother on a donkey, Machrihanish 1900

Douglas on a mule, Colchester 1918

Douglas' father on a horse, 1917

1. Childhood and family

My earliest dateable memory is of Armistice Day, November 11th 1918, when I was five and three quarters. (I was born on 10th March 1913). I was spending the afternoon with my cousins William and Ian Dunlop and their mother, my aunt May, who was my mother's older sister. They had a nanny called Nan. Her job was to take us a walk in the afternoon, and as we went out into the street, Aunt May came to the front door and said, 'Now, Nan, you must let them make as much noise as they like today.' So we went out being able to shout aloud but we didn't do so; we were so firmly trained not to make any noise in the street, not to raise our voices or to run about. I think actually that it may have been the next day, the 12th, because I doubt if news of the armistice, signed in Paris at eleven o'clock in the morning of November 11th, could have reached Edinburgh on the same afternoon with no radios to listen to.

Another memory which must have been close to that date was of being thrown off a mule, a most unlikely experience. My father was a minister in the United Free Church of Scotland and he was attached as padre to some regiment or other. They were always being shifted about from one barracks to another and my mother and I followed him, more or less. There was some place where we were, I think it was in Colchester, and for a treat I was taken into the barracks and given a ride on a mule. Someone led the mule, with my father to hold me on. I'm sure the mule objected and threw me over its head. I landed on the hard road. I wasn't, fortunately, seriously injured, and my father must have felt much worse about it than I did. It gave me a repugnance for horses ever after and I have never had any desire to ride one.

My mother, Harriet Lillias Gordon Douglas, was born on the first day of 1886. She was the third child in the family, the first being Scott and the second May. Their father was Gordon Douglas who might best be described as a businessman. His money came from a pitch lake in Trinidad, which he owned and managed.[5] He had retired from the management and came back to Edinburgh. He had been cheated of a pretty large sum of money which left him in reduced circumstances but not really hard up. Soon after returning to Edinburgh he married Harriet Mill, and not long after their marriage they made a journey to Trinidad. She kept a diary of the journey which was very difficult to read. They had an exceptionally rough crossing and the diary describes how almost every day she was sick and felt miserable. This may have been partly due to the fact that she was then pregnant with her first child. The account she gives of Trinidad, however, was much more cheerful. She says nothing about the cheating or the reason for their journey, but she frequently mentions a Mr Falconer who was the local minister. I do not think there was any connection with the other side of my family. They got back safely and their return journey was not as rough. I do not think that my mother had much

[5] In fact Gordon Douglas leased rather than owned a land site at Point d'Or near the main La Brea pitch lake, as letters of his in the National Archives make clear. See also 'Asphalt of Trinidad', report by Consul Pierce in *Reports from the Consuls of the United States*, No. 145 Oct. 1892, Department of State, Washington, 1892, pp. 207–230. [scanned on books.google.com]

liking or respect for her father. He seems to have been an opinionated and somewhat dictatorial man. He had advanced ideas about diet and clothing, and the clothes my mother and probably May too were made to wear made them feel very ashamed to go out, and particularly to go to school. In winter they had to wear thick woollen stockings and unfashionable clothes. I know nothing about her schooling except that she won a prize for music. It is a handsomely bound volume of Chopin Mazurkas, and has the following inscription: 'Prize awarded to Lillias Gordon Douglas, Junior Pianoforte Class, Ettrick Road, Edinburgh, July 1902.' After school my mother and presumably May too would have liked to go to university but that was not allowed. Scott was already at Edinburgh University and possibly their father could not afford to send the girls too. They lived in south Edinburgh which ever after my mother disliked because it reminded her of her unhappy childhood. After school she longed to get away from home and eventually managed it by becoming governess, or companion, to Geraldine Sang. They became good friends. Much, much later Geraldine, who was very well off, took my mother once or twice for a holiday in France. Recently Margaret found in my mother's small pocket dictionary a little note in her own hand about how to order morning tea (or coffee): 'Attendez! Mademoiselle à cent quatorze désirait café-au-lait complet, et donnez-lui un *supplément du lait chaud*. Moi, je désirais du Thé de Chine et un grand pot de l'eau chaude.'

My uncle Scott became a solicitor or WS. He looked after my mother's affairs and mine for quite a while, and was very kind to us. He lived in Clarendon Crescent, just across the street from May in Buckingham Terrace. He had a top floor flat which extended over two houses. He married Isabel whose elder sister had married one of my Falconer uncles, so she was connected to the Falconer side. She was very kind to us and Scott. They had a house in Gullane and used to come and visit us here in Mansionhouse Road very frequently and we were always pleased to see them. My mother was very shocked one day when she went into their Clarendon Crescent house and found Scott with an apron on washing the dishes. She thought this was wicked of Isabel because that was not a thing that men were allowed to do. So she didn't altogether approve of Isabel; she was a bit advanced in her thinking.

My aunt May, I think, was not quite so disapproving of her upbringing as my mother was, but she had no education and did not escape from the family. She married Harry Dunlop and they lived in 20 Buckingham Terrace, a large house with a basement, two main storeys and an attic. In the basement lived the cook, of course, or at least she worked there. The first floor was a large drawing room and two bedrooms, the third floor was the children's rooms and the fourth floor, the attic, presumably the maid's. I was always frightened of Uncle Harry, mainly because he had a cleft lip and cleft palate, and his speech was very difficult to understand, but he was kind enough. We used to go there every Christmas for dinner as well as many other times. My mother and May were very close together. They lived near each other and they had children about the same age, so we saw a lot of them.

The Douglas family in 1890: Gordon and Harriet with children Scott, May (front) and Lillias

Geraldine Sang (left), Lillias and Mrs Sang, Auchenlochan, April 1910

Douglas (right) with his cousins William (front) and Ian Dunlop,
Bellochantuy, summer 1920

Minna Cowan (left) with Douglas' mother and sister Iona at Nethy Bridge, 1932

I remember the ground floor at Buckingham Terrace was originally a billiard room, and I used to be allowed to try billiard shots, which I enjoyed very much, but the billiard table was soon removed and it was made into a large dining room. As well as the nanny Annie, they had the cook and I think a parlour maid, so they had three servants including Nan. At the back of the basement the path led through a narrow and dingy garden into the lane at the back where coaches used to be kept, but there were no coaches in my day. Harry always, since I can remember, had a car which was a fairly sporty type and was kept there. When I was young and we visited William and Ian, the children, my cousins, I played a lot with Ian: we had similar tastes, sort of mechanical, but William didn't come into it, since he didn't enjoy mechanical things, and I didn't at that time enjoy anything more intellectual. I must mention only one friend whom I liked very much. She was Minna Cowan who was regarded as a blue stocking, and the girls, that is to say May and my mother, were considerably in awe of her.[6] She wrote articles about social affairs and may even have been on the town council. She lived in Learmonth Terrace and I used sometimes to go and visit her on my way back from school, the Academy, and we conversed of this and that and I think she enjoyed my visits, as I did. One day, as I was leaving, she asked me, 'Douglas, why don't you write something?' to which I replied, 'Because I don't have anything to write about,' and she seemed to accept that as a very reasonable explanation. I wish she could have known how much writing formed part of my profession.

My mother had two maternal uncles, Hugh and Willy Mill. Hugh lived in London, and I think he was the only relative who left Scotland. He was a geographer with a special interest in the Polar regions, particularly Antarctica, on which he wrote articles and a book.[7] I don't think I ever met him. My mother and Aunt May regarded him with a mixture of awe at his cleverness and disdain for his lack of worldliness. He was naïve, they said. For example, he thought that the reason women wore skirts rather than trousers was because their legs were joined down to the knees. Anyhow, he did not marry until late in life, when he married his secretary. They thought he was rich, though I think he can't really have been, and expected legacies from him, so when the news of his marriage reached them, Aunt May's first remark was 'So bang went saxpence', and I think that later her remark proved to have been justified. Willy was a minister of the Church, retired when I knew him. He lived in Morningside. My mother used to take me to visit him every now and again, about once or twice a year, as she did many other of her relatives. I was extremely bored with these visits, except those to Willy, who I thought was very sympathetic and interesting. He talked to me, whereas the others gossiped and just talked about me. His daughter Laura Mill was a doctor specialising in mental health. She was on the control board which oversaw the running of mental hospitals.

My father was the third of four brothers. Their father was William Meek Falconer, minister of the United Free Church of Scotland, and his father was also a minister of the Church and was one of the signatories of the declaration that split the Church of

[6] Minna Galbraith Cowan, OBE (1878–1951) was honoured for services to education in Edinburgh.
[7] Hugh Robert Mill, *The Life of Sir Ernest Shackleton,* London, 1924.

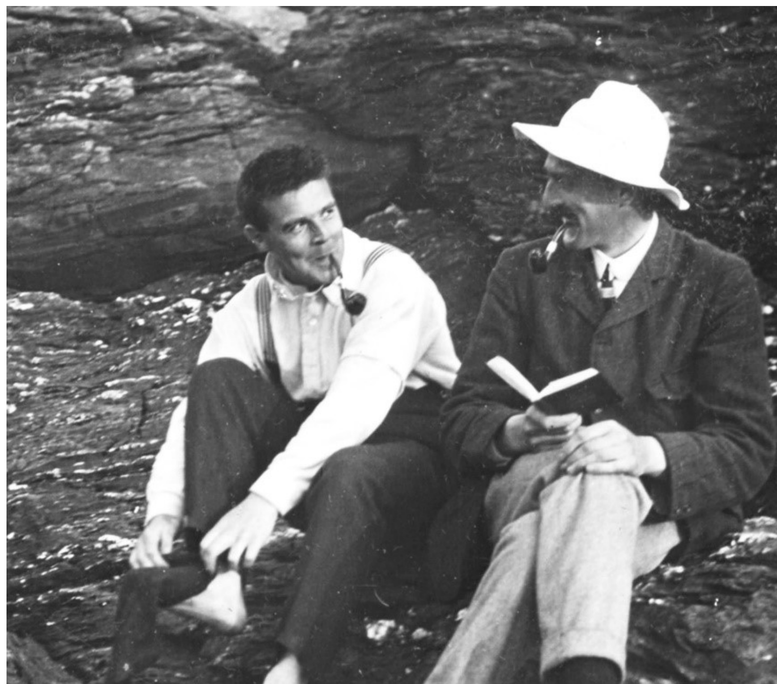
Scotland in two. The two factions differed in how they thought ministers of parishes should be chosen. The Church of Scotland appointed ministers to serve in parishes that were vacant. The Free Church thought that the congregation ought to choose their minister, and so they invited a group of short-listed to preach and let the congregation then choose whom they wanted. I don't remember ever having met William Meek, but I suppose I must have. He had a church, St Paul's, in Edinburgh.[8] The first piano tuner we had here, Mr Murphy, was delighted to find that he had sung in the choir of William Meek. Murphy told endless stories, and it was hard to separate them, because each story ran into the next one and we could hardly get rid of him. The Falconers lived in a large house called Gueronne House, just to the east of the foot of Ratcliffe Terrace [in West Mayfield]. Of the four brothers the eldest was Herbert, who was also a minister. I remember him as being a person who always disapproved of everything. He married Laura Somerville, who was the sister of Isabel who married Uncle Scott. After he died, she went to live in St Andrews, and when I was there, thinking I ought to visit her, I did several times. She received me kindly, but never invited me, and after a time I stopped visiting her, because I had the feeling that she did not like being visited. Then when Uncle Scott died, Isabel went to live also in St Andrews, and lived in the same street opposite Laura, and she told us that they hadn't spoken to each other, though they lived on the same street, ever since she came to St Andrews. Laura had three daughters. The eldest Jacqueline studied chemistry at St Andrews more or less at the same time that I was there.

The second brother was Charles, he was a civil engineer, and I remember him as a jolly sort of person. When he chewed, his jaw clicked loudly, and this I was told was due to his winning a wager that he would not be able to put four golf balls into his mouth. He succeeded and consequently had this annoying click all his life. I will speak about my father later. The fourth brother was Fred. He was a musician who played the violin and taught. He lived in a flat in Queen Street and survived longer than the other brothers, all of whom died young. So Margaret and I knew Fred when we came to Edinburgh. He was quite extraordinary in that he was unable to sight-read music, so his son told me, and yet he played, I think in the Reid Orchestra, and at one time had a quartet, which my mother took me to hear. I thought it was awful, though I had no experience of quartets at that age, but everybody seemed to play out of tune, particularly the cello. His wife Effie was a charming person. She taught the piano, and she taught me ineffectively but was delighted when I said I would like to learn Mozart's easy sonata, which I tried but failed. They had a son Charles who was a surgeon, and I used to meet people often in the train who, hearing my name, said, 'Oh, are you the surgeon or a relation of the surgeon, because I know him well, he cut me up.'

My father, Gerald Scott Falconer, was also a minister in the Free Church. I have no recollection of him before the war, and during it he was constantly being moved around and so I knew little of him. He was in Germany for some time with the forces there. He brought or sent back a small metal model of Cologne cathedral which fascinated me,

[8] St Paul's United Free Church in St Leonard's Street, built in 1836 and demolished in the 1980s to make way for the St Leonard's Police Station.

William Meek Falconer, Douglas' grandfather, c.1910



Fred (left) and Gerald Falconer, Machrihanish, August 1908

Douglas' parents, Lillias and Gerald, Machrihanish 1909

The 'Saxon', Gerald Falconer with Douglas, 1920

and I longed to visit it in reality, which eventually we did. My father died in 1924 when I was just eleven. I have few clear recollections of him. I remember him only as being a very kind and considerate person. After he came back from the war he did not go into the ministry again, I am not really quite sure why, but my mother said that he had lost his faith, or some of his faith, by his experiences in war, but I'm not really sure if that was it. He was ill then with kidney failure, and I suspect that was what made him unable to continue in the ministry. He had a job at Cargilfield School, and he was a master while I was a pupil there for a short time. I only remember him as preaching marvellous sermons which I could understand, which I couldn't often do, and his being a good teacher. I quite enjoyed his lessons, though I did not really enjoy anybody else's, but I'll say more about Cargilfield later.

My parents married in 1910. I think she knew that when she married, my father was ill and would not live for very long, so it showed enormous courage to have undertaken the job. He died of what was called Bright's disease, which is kidney failure of some sort. She said that before he died she asked him if he had anything to say to me, and he told her, 'Tell him that Mummy is nearly always right.' So I must have been just as headstrong and talkative as I was later.

My mother was a bit of a snob. She thought that the Douglas family were descended from the Black Douglas whose seat was Threave Castle in Kirkudbright. He lived at the time of Robert the Bruce and was said to have accompanied or taken Bruce's heart in a casket on a crusade to the Holy Land, and when they met opposition somewhere he threw the case of the heart forward saying 'Forward, Brave Heart, Douglas will follow thee or die.' Whether he followed or died or came home, I do not know. Anyhow, she saw herself as a class slightly above her other acquaintances, though she was extremely good at dealing with shopkeepers, home helps and so on, to whom she was very kind and considerate. But when it came to the friends and relatives, it was pretty obvious she didn't feel herself quite on the right level.

After the war my father was stationed at Glencorse barracks near Penicuik. My mother and he rented a house in Roslin and he came to visit us from the barracks when he could. He had a little car at that time, I suppose his first, in which he came. It was an open two-seater covered with a hood which kept out some of the rain, and was black and called a Saxon. The house was along the road that led past the chapel, and we had a governess who presumably was meant to teach me something, though I don't remember anything of what she taught me, if she indeed did so. She took me for a walk in the afternoons, down the path that ran along the bank of the river, down a steep path past the chapel. There were trees along the river bank with branches hanging out over the river. One day I swung out on one of these branches to give myself a swing above the water, but unfortunately I didn't see that it was rotten, and the branch broke, letting me fall into the water. It was a bit of a shock, but I think it must have been a much worse shock for the governess. Anyhow the water wasn't deep and I scrambled out quite easily. I must have been taken to the chapel at one time because I have a recollection of being amazed by the Apprentice's Pillar.

My recollections of life after the war are few and hazy. We lived with my father in a top flat in Learmonth Terrace just opposite Buckingham Terrace where Aunt May and

Uncle Harry lived. I slept in the back room, and I think my parents probably slept there too. I remember having night terrors which were very unpleasant. The back window looked out on a drop to the ground floor, with no break in the wall or balconies or anything, and I thought that a burglar would climb up and come in the window. No amount of logic pointing out that no one could climb that wall had any avail in stopping my terrors. I don't think they lasted very long, no more than a few months perhaps. The only other thing I recollect about that house was that my parents had a new wardrobe delivered, and a few days later it developed a warp in the door which would not shut, so a joiner had to come and fit a clamp on the door to try and persuade it to straighten.

Roslin, 1920

2. Cargilfield

It was from here that I was sent to Cargilfield School as a boarder. Why my parents sent me there I do not know. Perhaps it was because of my father's illness, or perhaps they thought that a boarding prep school was a good prelude to a real public school. Before that I went to a kindergarten school in Melville Street or near there. All I remember of it was that there was a boy there called Joinson: 'Joinson, not Johnson' he always said. Every day he brought with him a 'rawregg' to sustain him during the morning. I suppose I was taught to read and perhaps do some arithmetic, but I can't have been taught well to read because when I went to Cargilfield I had to attend extra reading lessons because my reading was then too bad to admit me.

When my father was appointed to Cargilfield, he and my mother built a new house in Cramond about half a mile from the village. It was opposite the end of Gamekeeper's Road, which runs along past Cargilfield School and grounds. We used repeatedly to go and see how progress with the building was getting on, and I remember one day I was very disconcerted to find that one of the walls had blown down completely and it looked awful. But the builders reassured me and said, 'Oh, it doesn't matter; it'll hold firm when we've once got the first floor rafters in.' And so indeed it did. We lived in the house a year or two, and it was quite pleasant except that the garden was just bare earth with little plants put in here and there. But it was a nice house and I was very sorry to leave it, which we did after my father died.

We then went to live with Uncle Scott in his flat in Clarendon Crescent. He was then unmarried. He had a large handsome wind-up gramophone which I was allowed to use. It took large triangular needles made of cane and had a special tool to sharpen the needles by slicing a piece off the ends. He had records, mainly operatic ones which I didn't much like, but there was one of Richard Tauber singing *You are my Heart's Delight*, and I thought that was marvellous. There was also a record of the *Oberon* overture, with, on the other side, the *Praeludium* by Järnefelt. I've only once heard that performed since then. Then there was the *Peer Gynt* suite. These records were my first experience of orchestral playing, and I listened to them a lot.

I started at Cargilfield in 1921 when I was eight. By that time my father and mother had become great friends with the Headmaster Mr E. C. Thomas and his wife. They had four daughters, the youngest of which was about my age and much younger than the other three. We played a lot together, mostly outside in the garden and grounds, and I think both sets of parents were pleased to have us thus peacefully occupied and out of the way. Mrs Thomas was a motherly soul but slightly domineering. Mr Thomas was retiring and I have few memories of him. I think he ran the school well, discipline was fairly strict, but he wasn't at all unpleasant, but he was totally uninspiring as far as I was concerned, and we didn't see very much of him. There were about a hundred and five boys in the school, all boarders, and I was number 105. The way one knew how many boys there were was from the pigeon holes in the little room where our shoes were kept, which were all talking to the 'Boots', whose duty it was to clean the shoes, and I learned

from him how to do that. A really well cleaned pair of shoes had the insteps on the soles blackened with polish, and occasionally he did this to some of the shoes, but I don't think every time. I have always liked watching people do things, and I used to watch every workman in the house round about, whatever he was doing, possibly out of curiosity, not I think directly aiming to learn how to do things, but I did learn almost everything I know how to do manually from watching other people do them. I remember little of the lessons, and I think I learned slowly and little. My reports were always in the vein 'Could do better', 'Must try harder' and so on. They were all like that. Occasionally I was called to the Headmaster's room to be told that I must work harder, but it was to no avail. I have no very clear memories of any of the masters, but they were all pleasant enough and none of them objectionable. Another thing I liked was that occasionally we had carpentry lessons. I suppose these were regular, but they didn't seem to be. We learned basketwork, fretwork and a little joinery, how to make the simplest kind of joints. My father was good at this, and while he was alive he helped with the teaching, and I have inherited quite a number of his tools, some of which I still use.

Douglas on the slide, Cargilfield, December 1923

Then there was the music, which also gave me pleasure. There was an organist who played the organ for the chapel services and I remember being very thrilled when he played Handel's *Largo*, the first time I had heard it. I thought it was marvellous. And there was a choir. We didn't sing in chapel except hymns, but occasionally we did quite big things. I remember doing *Hiawatha*, with music by Samuel Coleridge-Taylor. And on one occasion we did *The Mikado* in which I sang the bass part, an octave higher of course, and I expect we had professionals or near professionals to sing the solo parts. I enjoyed that very much. A few years after that, when I was at the Academy, we sang *The Mikado* again, and I was a bass in its proper pitch, or maybe a tenor. We had to play games three times a week, and I hated the rugby, but I didn't really object to the cricket, because it just meant standing around and that was all right when the weather was good. And I wasn't too bad at catching, though I was hopeless at bowling and could never bowl an overhand ball, and almost equally hopeless at batting. There was no other choice available. In spite of my slow reading, I did read quite a lot at Cargilfield. I suppose I got the books from the school library. What I enjoyed were backwoods stories of Canada and America by an author called Roberts. These were short stories, about ten or twelve in a book, depicting incidents in the lives of trappers, hunters and all the animals in the forest, and I got to know quite intimately the ways of life of a lot of these animals. One story has remained in my mind ever since because it is so silly.[9] There was a trapper or hunter and he fell over a cliff, which no real hunter or trapper of course would ever do. He landed on a ledge not far below, but found he had broken his leg. Luckily there was an eagle nesting on that ledge, I suppose it was an osprey because it brought fish every day for its chick, and the trapper lived on the fish from the nest until his leg mended and he got home.

We went to church every Sunday morning, the Presbyterians to Cramond where the minister was a Dr Stott who was very learned and totally incomprehensible and preached very long sermons. The Episcopalians went to Davidson's Mains where the services were shorter and usually more comprehensible. We were allowed home occasionally, I think perhaps once or twice a term, in the afternoons, and those of the Presbyterians going home were allowed to go to the Episcopalian church instead because it was shorter and got out sooner, and we caught buses into town. I remember only one of the other boys, with whom I was very friendly. This was Donald MacKinnon, who was very clever and became an academic. He was in Cambridge for a time and later went to Aberdeen as Professor of Moral Philosophy. I read some of his stuff later and couldn't understand any of it, but at school we got on well together. He was totally disorganised and unpractical. He couldn't dress himself, or do anything, but he seemed quite happy nevertheless. My father had a wonderful photograph of him going out on to the cricket field one sunny afternoon. His shirt was buttoned crookedly hanging over one shoulder, his trousers were also buttoned wrong and were not straight, and one sock was down to its ankle, but he had a beaming smile on his face. I was homesick and miserable all the time I was at Cargilfield. My friendship with Donald MacKinnon alleviated matters slightly, but not very much, and I've already recounted

[9] *The Sun-gazer by* Charles G. D. Roberts.

the only things I can remember enjoying. There are one or two things I should have mentioned before. Our clothes: we wore shorts and a jacket, grey I think, and I think we wore Eton collars, though I'm not absolutely sure about that. I remember having struggles with the studs trying to get them on. As I said before, Mr Thomas kept a strict discipline. He did this mainly by talking to people in their rooms when he disapproved of what they did, but occasionally he beat them with a fives bat, not very severely, I think. I don't think I was ever beaten, at least I have no memory of it. We had a mistress who taught the younger classes. Her method of curbing unruly boys was to make them sit in a wastepaper basket outside her door. Once when I was there, Mr Thomas came along, saw me, and was pretty obviously rather amused. Anyway, he did not give me a lecture about my wrongdoings. Then about my reading, it is interesting how I learned the meaning of new words. I was too lazy to use a dictionary, nor did I ask anyone what they meant, but I just went on and after meeting a word several times, I could get its meaning from the context and the way it was used, and this I have done always, hardly ever using a dictionary.

Shortly before I left, thoughts were being taken about what I should do next. I was first entered for the navy, presumably a school for aspiring officers. I don't remember an exam, but I had to go to London for an oral or interview, presumably my mother took me there, and I found myself in a large room with a huge oblong table, sitting round which seemed to be a dozen or so officers in their finery of uniform, and presumably I was questioned, but I have no recollection of it. I think I might have been a good naval officer, but fortunately I was rejected, because I'm very glad now that I did not go along that route. Then I was entered for Fettes for a scholarship because the fees would have been too much for my mother to afford, and I went twice for interviews, and was rejected both times. I think the reason on one occasion was that I couldn't answer the question 'What is a visor?' I'd never heard of it, why should I have? Anyway, once again I was very pleased, eventually, that I did not have to go to Fettes, and I went to the Academy instead.

One day in December 1924 I was in the sickroom with the usual chest infection when Mrs Thomas came in with a long face to see me, to tell me that my father had died. I did not feel any immediate sense of loss, because I think I must have known this was coming for quite a long time, and I had not been very close to him and so did not feel any intense grief. Shortly after that, the Thomas' third daughter accompanied my mother and me to St Ives in Cornwall to give her a break. I used to play on the sand just in front of the hotel, and one day there were a number of rivulets flowing down the sand side by side, and I thought it would be a good idea to try and divert one into the channel of its neighbour, so I dug hard with my spade to build up an embankment that would take its flow in the right direction, but it kept getting broken down and it reverted to its previous course, but eventually with much hard work I succeeded in making it flow into the next channel, and I was very pleased. I decided then and there that this would be the subject of my first sermon, that perseverance achieves results, but of course I never gave a first sermon.

But I did once address a congregation from the pulpit. This was when I was at St Andrews and was an office-bearer in the local branch of the Student Christian

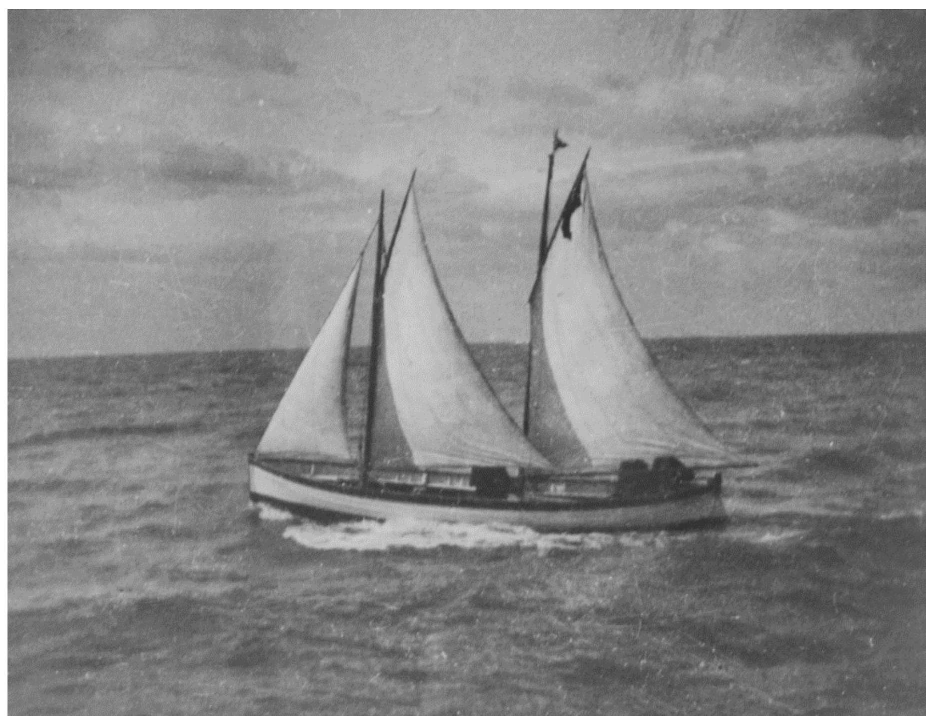
Movement (SCM). One of the things we did was to attend conferences all over the place, and discuss I don't remember what, but pretty boring subjects, and when we came back we had to give an account of what had happened at the conference. On one occasion I was asked to tell a congregation in Aberdeen what had gone on, so I got up in the pulpit. I don't remember what I had to say about the conference, probably very boring, but I do remember how I introduced it. I said that when I first came to Aberdeen, I thought it a very forbidding and unfriendly place because of the grey granite in which all of the buildings were built. But as soon as I met the inhabitants they totally changed my mind, as I was met with friendliness everywhere. So that could have been another subject for a sermon, but it wasn't.

Iona was born in 1922 when I was nine. Our difference in age meant that I could share few of Iona's interests and I could never be a proper companion to her. My mother kind of expected me to be a companion to her as a substitute for my father, and she thought that I should be something of a father to Iona. Anyhow, Iona got a very raw deal during all her childhood, because my mother always thought that my interests deserved to have preference over hers. Iona's birth took place when I think we were living in Learmonth Terrace. I seem to remember her there as an infant, and I took great pride in her. I enjoyed tending her in any way that I was able to, and I felt no sort of resentment at the arrival of a possible rival to my parents' affections.

Douglas and Iona, Cargilfield, July 1924

3. Machrihanish

I should say something here about holidays. I have fragmentary recollections of two holidays with my father. The first, in about 1920, was spent somewhere in Mull. My father and mother fished from a boat in Loch Frisa. I think that was its name but I do not know where it was. I enjoyed going with them for this, and I think that must have been the first place I had experience of rowing. Another first experience was fishing. I had been given a small rod and was shown how to fish with a worm in a burn, how to throw the worm upstream and let it drift down. After a few such throws a fish hooked itself, and it gave me such a fright that I pulled it out with great force, throwing it well over my shoulder, and had immediately to sit down on the grass to recover from my shock. Despite my shock I subsequently always liked fishing, though I never took it seriously enough to become very good at it. The second holiday was on a loch, Loch Earn perhaps, or Loch Awe, on which we hired a boat. My father with his brothers had had a boat on the Forth in which he was said to have sailed to Elie. There is a photograph of it showing a large open boat with two masts and lugsails. Though he liked sailing, I don't think he had any opportunity to do any later in life. But when we hired a boat on a loch, he rigged up one of the oars as a mast and a rug to act as a square sail, and in subsequent holidays we always did this, though I improved on the rug by having a piece of sacking cut to the right size. These square sails made the boat go quite well, especially if there was a reasonable wind, but then the row back was much harder and one had to be careful not to sail too far. This holiday with my father gave me my first taste of sailing which afterwards I came to enjoy.



Gerald Falconer's boat on the Forth

Douglas rowing, Mull 1922

Douglas fishing, Mull 1923

Machrihanish from the diving rock, April 1930 (Douglas Lodge in the centre)

Picnic at the Gauldrons with Lillias (centre), April 1902

Most of the holidays before I left Cargilfield were spent at Machrihanish on the west coast of Kintyre opposite Campbeltown. Gordon Douglas had built a house there for holiday use, called Douglas Lodge. It was a fairly large square-looking house of two storeys built of a red or grey sandstone. It was one of about five similar houses built along the shore at the west end of the village. A little further east there were about ten bungalows, almost all used for holidays. The chief attraction there was golf which did not interest me, and we saw few people elsewhere than on the golf course. I was given lessons in golf and taught how to swing and do various things, but I was terribly bad and never enjoyed it. I always thought that golf only spoiled a good walk. So I gave up as soon as I could.

Gordon Douglas' house was inherited by Uncle Scott, but Aunt May and my mother frequently used it and he sometimes was there. In front of these houses was a small sandy beach looking northward with views of the Paps of Jura and Islay and the Mull of Oa just visible on the horizon on clear days. Further west there was another beach of stones and rocks, with patches of coarse sand. It faced west and got the full brunt of the Atlantic storms. The waves there were magnificent on stormy days, and at the right stage of the tide there was a spouting rock where the water shot up a long way like a geyser. That bay was called the Gauldrons. It was the favourite place for picnics which occupied many days. Beyond the Gauldrons were low cliffs, on one of which a pair of peregrines usually nested. Close beside the house was the entrance to Lossit, the house of the local laird. We were friendly with them and were given permission to walk anywhere in their grounds. Beyond the house there was a glen with steep wooded sides running up a burn and there was a path leading up it to the moors beyond, which was a pleasant walk. But I seldom used the permission to walk there because I was embarrassed to walk up their immaculately kept drive with its small gravel and walk across the lawns to reach the glen. Machrihanish was not a real village and there were very few cottages. At the entrance to Lossit there was the gamekeeper's house and close by there were very ramshackle huts and a cottage in which lived a fisherwoman, Nell, who had a rowing boat and did all the fishing by herself with no assistance. She set creels and I suppose she caught lobsters and crabs, but I do not think she set nets. Anyhow, I don't remember any fish coming from there. How she lived I do not know. Further east along the village, between the set of villas and the bungalows, was a village store. It was kept by a pair of sisters, Susan and Janet.[10] Susan mostly stayed at home doing the housework, and Janet manned the shop. She always wore white, and every day could be seen hurrying along the road to the shop, her long white dress blowing in the wind. I suppose she stocked the usual things for a village store, but I only remember buying sweets there, usually liquorice. Then there was the station, or at least an open space where the trains stopped, about which I will say more later. And also on the shore to the east, there was a long bay stretching north. It was called the bay though it wasn't really, it was a long stretch of sand with sand dunes behind, and behind them the golf course. It was quite a long walk to the end of it, perhaps a mile and a half or two miles. Near the shop was the post office. The post mistress' daughter, called Nancy, often

[10] Described by Douglas in a school essay in 1926: see Appendix 2.

served at the counter. She was disabled and somehow frightened me. I had never encountered anybody like that before, and had difficulty knowing what to say to her. It was hard to understand her speech and her movements were restricted. But she was a very nice person. I always regretted that I never knew how to treat her. Much later, when Margaret was here, we visited Machrihanish once, just to see what it looked like, and to me it seemed rather a small and uninteresting place, though it certainly was not that when I was there as a child. We went for a walk along the Gauldrons and there I met Nancy walking with a friend. I immediately recognised her and she recognised me too, so I spoke to her with great pleasure and was always glad afterwards that I had this opportunity of talking to her again. Behind the houses was a small grassy hill, perhaps two hundred feet high, with sheep tracks all over it, and a sort of cliff of grassed sheep tracks just behind the houses, which proved an ideal place to play. What we did at Machrihanish I do not remember, but we enjoyed every moment of it. When the weather was warm enough we bathed. Otherwise we picnicked at the Gauldrons, or took walks, but never very ambitious ones.

The journey to Machrihanish was quite complicated. The train left Caledonian station at half past six in the morning. At Glasgow we had to change stations and get in another train which went down the Clyde and stopped at Gourock. Just beside the station was the quay where a ferry would be waiting. There were two such ferries, one was called the *Davaar*. Both were paddle steamers. The engine house projected on to the deck, covered by a wooden shield with glass windows through which one could see the enormous pistons or cylinder heads, I don't know what they were, rising and falling slowly, with an accompaniment of a hiss of steam escaping, and a smell of lubricating oil and steam. These ferry journeys were very enjoyable. I always longed for it to be very rough, but it seldom was, though passengers were often sick even if it wasn't rough. The ferry called at several places on the way, notable on Arran and at Carradale in Kintyre, before it got to Campbeltown. There close by the quay there was a train waiting. There was a narrow gauge railway from Campbeltown to Machrihanish, a distance of perhaps six miles, not very far. The train went very slowly. The carriages were like tramcars, with a platform at each end, and sometimes one would see a man jump off on the platform, run alongside while the train was going, and then jump back, which shows just how slowly it went. At the station at Machrihanish there were always a few goods trucks lying on the lines for bringing coal to Machrihanish, I suppose, though I do not know that they ever took anything back. There were no trains in the evenings, and occasionally William and I would go along and take one of these trucks and push it up the slight incline out of the station and let it run back again. This was good fun, but I suspect it would be very much disapproved of, and with justification, because who could know if no train would come in the evening, and if it did, it might cause quite a lot of trouble if it found a truck lying there on the line. However, we never had any trouble.

Later on I went several times to Machrihanish on my own, usually in the spring holidays, and I stayed with the gamekeeper Donald Fraser and his wife in their cottage. They had no children but they had a young black labrador with which I got on very

Douglas playing golf at Machrihanish, 1920

SS Davaar, April 1902

The gamekeeper's cottage, Machrihanish, April 1932

Douglas watching a guillemot, Machrihanish, 1919

well. We spent lots of the time playing together on the sofa in the kitchen. Mrs Donald was very long-suffering to let us make such a noise and fuss in the kitchen. The house was very primitive. There was no running water, with the lavatory just a square wooden construction behind the house. I always went with Donald accompanying him on his daily tasks; sometimes to the kennels to tend to the dogs or to paint the kennels; other times to walk out with his gun to see if he could shoot any vermin. I don't remember that he ever did except once he shot a peregrine, a thing unheard of nowadays, but I did not regret it at the time. I enjoyed my staying with him very much. They were a very nice couple. I developed my interest in birds there. This had started at Cargilfield when I decided very deliberately that I would try to be able to recognise all the common birds by their voices, whether songs or calls or whatever, and eventually I more or less achieved this. My mother knew the common birds well and indeed some of the less common ones. For example she knew the call of a migrating whimbrel, the seven whistles, which we sometimes heard later on our holidays in the Highlands. The only new bird I recollect seeing at Machrihanish on these visits was the purple sandpiper which I thought, and always have done, is a very attractive bird.

One holiday which I remember well, not at Machrihanish, was on a loch. I think it must have been at Lochearnhead. Cargilfield had two air rifles which were used for target practice. I think I must have been quite good at it because in the spring of the year I left they entrusted me with one of these guns to take away on holiday with me. I went out with the gun trying to find birds to shoot. I had little success, but I did shoot a robin. When I found it dead I much regretted what I had done, and I did not try to shoot any more. On another occasion on this holiday my mother and I took quite a long walk along the shore of the loch, and we came on a ruined farm with the chimney still standing, in which there seemed to be a barn owl nesting because we heard it screeching. To find out what it was and see if it was there, we lit a fire in the grate under the chimney and smoked it out. As it flew out of the chimney, I fired my gun at it and hit it, quite an accomplishment to shoot a flying bird with a rifle. I do not think it killed it, but I heard the pellet strike very distinctly on its feathers. I cannot imagine how my mother allowed me to do that, or how she participated in the lighting of the fire. My third recollection was this. On the loch there was a small rocky island, a crannog, which we visited several times. We had as usual hired a boat. It was not an interesting island but on one visit my mother found a crisp white five pound note, quite a lot of money then. She was thrilled, she always liked finding money and frequently picked up money in the streets. I think it was taken to the police station, and certainly it was never claimed and she was able to take it home proudly and use it.

Douglas and Iona, Machrihanish, April 1931

A bookend painted by Douglas, probably 1930s

4. The Edinburgh Academy

Having been rejected by the navy and Fettes, when I left Cargilfield in 1926, I was sent to the Edinburgh Academy. I do not know why my mother did not send me there as the first choice. Though Uncle Scott and Uncle Harry had both been at Merchiston, my father and all his brothers were at the Academy. There was a very clear social hierarchy among the boys' schools in Edinburgh. At the top were Fettes and Merchiston, then possibly Loretto, and then the Academy, followed by Watson's, Daniel Stewart's, Melville College and the High School. Whether it was a matter of social standing I do not know, but I think it was probably that she thought I would have a better education at Fettes, though the navy would have provided me with a ready-made career. She had for some time been worried about what I would do, and after consultations, I imagine primarily with Uncle Scott, she had suggested to me some years before that, that she thought that the job of a factor to an estate would be one that would suit me. It would give me a more or less outdoor life, and lead to some interesting work. But I did not greet this with any enthusiasm. I must confess that at that time and for a long time after, I had no idea of what I wanted to do with my life. I could be said to have just drifted from one thing to another, but in the end I did what I liked to do best.

I started at the Academy in class 3a and I went through the school in the A stream. There was no doubt that there was streaming according to ability, and probably inversely according to sporting prowess. I do not remember having any examination or interview for the Academy, but I was accepted and my mother had the fees drastically reduced for her, being the widow of a clergyman. But my reports at the beginning were very discouraging, just as at Cargilfield, 'Could do better', 'Must try harder', and after a year or two, the Rector told me that I really must pull up my socks, otherwise I would have to leave. So I did try to pull up my socks, but without much success at first. I was really bored by all the subjects that were taught, and my first interest in any subject was aroused by lessons on geography by Mr Hempson. He treated geography as physical geography rather than economic, and this really interested me. It was my first introduction to anything scientific, because this was more science than geography. After some years I got into the sixth form science, and there my interest really awakened, and I loved it. The chemistry master was Mr Fairgrieve. I enjoyed his lessons though I did not really take to chemistry. He was off school for a long time having had a bad motorcycle accident when he was run into by a car at a crossing. He came back with an artificial leg which he managed pretty well. The physics master was Paul Wightman. I got on much better with physics. He was extremely interesting and taught well. He left later to do a PhD at Aberdeen on the history or maybe the philosophy of science, and later got an appointment as a lecturer. He brought in a little biology to his lessons, but my first real introduction to biology was not through school. H. G. Wells' and Julian Huxley's *Science of Life* was first published in parts and Uncle Harry subscribed to these. He passed on each part to me when he had finished with it. I read them all avidly and found them extremely interesting. The book covered almost all of biology, I think,

and was written in very simple terms, so was easy to understand. It gave me a really good grounding in biology, including some elementary genetics. At school after school hours there was a lecture that I particularly remember. It was by D'Arcy Thompson of St Andrews. I will have much more to say about him later. He talked about the logarithmic spiral and was quite fascinating about its occurrence in living things such as the nautilus shell and other snail shells. He connected it with mathematics and showed us how the logarithmic spiral was generated mathematically, though I do not remember what he said and I still do not understand it. But he also brought in the golden section so much used in classical architecture, and this further stimulated my interest and perhaps aroused my interest in biology. I did well in the science classes and nearly got the class medal at the end, but was beaten by one of the others. The Rector while I was there was Lyon. He came when I did, and he left when I did. I remember his lessons in English, particularly poetry. I never got really interested in poetry, but I liked his lessons. There was one occasion when he sent us home with the instruction to write a poem for prep, and I turned up the next day and said, 'I'm sorry, sir, but I haven't been able to write anything,' so he said, 'Well, never mind, it doesn't matter,' which I thought was a very nice attitude.

Edinburgh Academy, VI Science class photo, summer term 1930,
Douglas in blazer beside the class master F. A. Hardy

Other things I remember were the musical activities. Every other year there was a performance of a Gilbert and Sullivan, and the first of these that I was in was *The Mikado*, which I had sung in at Cargilfield as a bass, an octave higher. This time I was an alto at the right pitch. The next was *Iolanthe* which I liked very much. Between the Gilbert and Sullivans was a play which I never took any part in because I didn't think I could act, and I particularly remember one performance of *Hamlet* which I thought was absolutely marvellous. The boy who acted Hamlet did it extremely well, and I have often thought since, when I have occasionally heard a broadcast of a school performance of Shakespeare, that the boys often do it better than the professional actors. I disliked rugby as I had at Cargilfield. Cricket was not so bad, but very boring because one spent so much time doing nothing, either sitting waiting for it to be your turn to bat or standing around on the field waiting for a ball to come your way. I was very bad at batting and hopeless at bowling, but not so bad at catching, so just occasionally I had something worthwhile to do.

The OTC, however, was not as bad as I expected it would be. It gave some satisfaction to do things well, even drilling, but cleaning buttons was a weekly chore that I resented, so one day I put lacquer on my buttons which was supposed to preserve the shine and made cleaning unnecessary, but it also dulled the shine which was at once spotted and I was ticked off, so I had to spend much more effort brushing to try to get rid of the lacquer. We were taught the rudiments of map reading which later proved very useful, and another thing we were taught was how to fold blankets which, though not so useful later, was a method that I always followed. The summer camp at Elie, however, which I attended once, provided little of enjoyment or of useful experience. We seemed to be always hustled from one thing to another, and I was always scared of being late for the next assignment.

I had two good friends at the Academy. One was Don Lorimer, with whom I had few shared interests except walking in the Pentlands, which we did as often as we could. He lived in Forbes Road. His father was a doctor, his mother was rather deaf and Dr Lorimer had to talk very loudly to make her understand. I visited them quite often. Don joined the navy soon after the war began and was drowned in the Mediterranean. Long after, I thought I ought to go and visit his parents, because they had been very good to me, but I was received with extreme coldness, and was sent away with the question, 'Why were you not in the war?' I did not answer the question, but I went away greatly saddened. The other friend was Walton Hannah who was in the same class as me from the beginning. He spoke with a distinct American accent. They had lived in America for some time and I think his mother was American. Here they lived in a large house called The Whim at Lamancha, which is about ten to fifteen miles out of Edinburgh. That was too far for him to come in to school, so he lodged with a Mrs Buchanan not far from the school. She was a very managing person and indeed demanding. He told a lovely story of how once he overheard a telephone conversation. A tradesman had rung up to ask about some point, what they were doing, and asked to speak to Mr Buchanan, and she said, 'What is it you want?' He said, 'I want to speak to Mr Buchanan, if I may please.' To which she replied, 'I am to all intents and purposes Mr Buchanan. Now what is it you want?' Poor Mr Buchanan, I often felt sorry for him. She was very domineering,

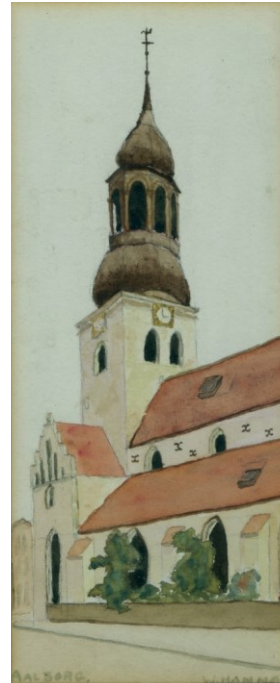
and he seemed very 'hodden doun'. I quite often went to visit Walton at The Whim when his family was there. He had a father and an elder brother called Jack, and a mother whom I don't remember very much. The conversation there was an eye-opener to me. His father and Jack talked and argued incessantly. I don't think the mother said very much, but these conversations went on for ages, mostly about political matters. I don't remember what his father did, but he could well have been an MP; certainly that's what the conversation suggested.[11] I was fascinated, though of course I could contribute nothing. Walton was very High Church, and my mother ridiculed him for this, in a joking manner, of course, and predicted that he would soon join the Catholic Church, which indeed he did some years later. As far as I can see, it made no difference whatever to him.

Toward the end of our stay at the Academy, Walton and I went on a sort of cruise together. My mother had somehow found out that it was possible for cargo ships to take passengers of a sort, and through an acquaintance or friend, she arranged that we should join a cargo steamer from, I think, Bo'ness in the Forth. So we duly came there on the appointed day but were told that the ship couldn't take passengers, so we would have to sign on as cabin boys, which we were very happy to do. The boat took coal from the Forth to Denmark, and then went on under ballast into the Baltic to Finland, and there loaded pit props to take back to Scotland. We had no duties as cabin boys, but were often asked to take the steering wheel, which was quite good fun though it got a bit boring in the end. We had to steer a compass course and to keep the ship well and truly headed for the compass point, the object being not to deviate from the route and not to zigzag, because that was a waste of both time and money. That wasn't too difficult if the horizon could be seen, but when there was fog or mist it was very difficult. The compass moved very slowly and when one noticed that it was not on the right course, I tended to overcorrect too quickly, so that it sent the ship into sharp zigzags, and when this happened, I was quickly ousted by one of the crew, because it was too great a deviation that I was making. We stopped in Copenhagen to unload the coal which was done during the night. The grabs from the crane were dropped into the hold to take up the coal and this happened right outside our kitchen window and went on all night. In spite of this I slept soundly right through the night. It is really extraordinary what a noise one can sleep through. We then went up the Baltic and tied up on a Finnish coast; there being no tide in the Baltic, or almost none, the ship could be tied up quite close to the shore. There logs for pit props were loaded into the hold and on deck, with vast piles of them on the deck. While the loading went on, Walton and I went ashore to explore. While I was looking for birds, of course, he was sitting calmly painting a church, the painting of which I still have. It was a very nice painting, except that I objected very strongly that he had put in pine trees round the church, whereas the trees there were, of course, all firs. He thought I was quibbling, but I was very serious about it. Obviously I thought a painting had to represent reality more than being an artistic construction. After that we went straight home, an uneventful journey except for the difficulties of steering in a mist. I suppose we were away for two or three weeks, and we certainly

[11] Ian Hannah, Conservative MP for Bilston, 1935–44.

both enjoyed the trip very much. He became an Anglican priest and later converted to Rome. Then he went to Canada, but died soon afterwards, unhappily when he was still quite young.

Walton Hannah, July 1929



Aalborg church, by W. Hannah

I must here say something about where we lived while I was at the Academy. About the time I left Cargilfield, my mother bought a small house in Blackhall in Craigcrook Road. Our furniture was got out of store, where it must have lain for two or more years, and installed. It was a strange house. It was the middle one of three built very similarly; on one side there were tenement buildings and on the other beyond there were more opulent villas. The most strange thing about the house perhaps was that it had obviously suffered a good deal of subsidence, which should have made it much cheaper to buy, but I don't know whether it did. The downstairs front window was very crooked and would not shut properly, and a ball on the floor of the front room would roll quite fast across the floor to one corner of the room. Many years later Margaret and I went to have a look at this house, and the subsidence had obviously got worse. There was a large wedge fitted to the front room window to make the sash fit the sill. Downstairs at the front was the dining room, and above it the drawing room where we had tea and spent the evening. At the back there was a bedroom for Iona and a bedroom for me. My mother for herself had a very small room upstairs. On the ground floor at the back was the kitchen and I think the maid's bedroom, for we had a young maid, a girl from the Highlands, who was resident. The only heating in the house was a coal fire in the dining room and another in the drawing room. It was the maid's duty to light the fire for us to come down to a warm room for breakfast, and I remember the joy of coming from a freezing bedroom to a fire. Though the sight of it may have given some warmth, there was not much warmth to be felt at that time in the morning, unless the maid had been up

really early. To coax the fire into more activity, we held a newspaper spread in front of the chimney, and held it there till the fire blazed, taking it away, one hoped, before it caught fire. The upstairs fire was only lit for the afternoons. When the chimneys needed sweeping, we simply put a burning newspaper up them and set them on fire. That was cheap and easy, but it made a terrible acrid smoke, and particles of soot fell all round about when the chimney was on fire. There was a bathroom upstairs with a bath and hot water heated from the kitchen stove.

It was quite a short walk from the house to Corstorphine Hill, which was wooded, and I went there often and learned to recognise some new birds. We soon acquired a dog, a Shetland collie called Benjie. He was a very friendly and well behaved dog, and he always accompanied me to Corstorphine Hill. Blackhall is some two miles out of Edinburgh, but I don't remember ever taking a bus there; we went on foot. We went every Sunday to church at Saint Cuthbert's at the West End, and walked back again, of course. We often went to visit Aunt May. Iona was too small then to walk such a long way, so she had to go by pram. One time I remember there was thick snow, and I thought we couldn't push the pram in the snow. Possibly we were going to Christmas dinner at Aunt May's, to which we were always invited, and I thought we should put the pram on to the toboggan, which was the Flexible Flyer that I still have. My mother was very sceptical and apprehensive, but eventually allowed me to do it, so I tied it on and it went splendidly on the snow and we got into town without any mishap.

I went to school from there by bicycle. We had no friends near Blackhall, but I soon made the acquaintance of a boy of my age living opposite, but mother very soon made it clear to me that he was not the sort of boy that I ought to be friendly with, so I had to drop him. My performance at the Academy in the early years was very poor, and I think that this was largely due to the fact that I almost completely neglected my prep. Instead, I played with Meccano, which I am sure was later of much more practical use to me than the prep would have been. I was fascinated with the problems of constructing things such as cranes, bridges and so on out of Meccano, and spent a lot of thought on how it should be done, and Meccano is one of my main recollections of living in that house. One day my mother said she had got a gold sovereign which she had found among her possessions, and would like to spend it on a really advanced Meccano set for me, so we went into town to a shop, I think in Castle Street, and told him what we wanted. But when she handed the attendant the sovereign, he looked at it and then looked up sadly at her and said, 'I am afraid, Madam, that this is only a half sovereign.' So I was very disappointed, but as it turned out the set that this would buy was so much better than what I already had that I soon became quite content.

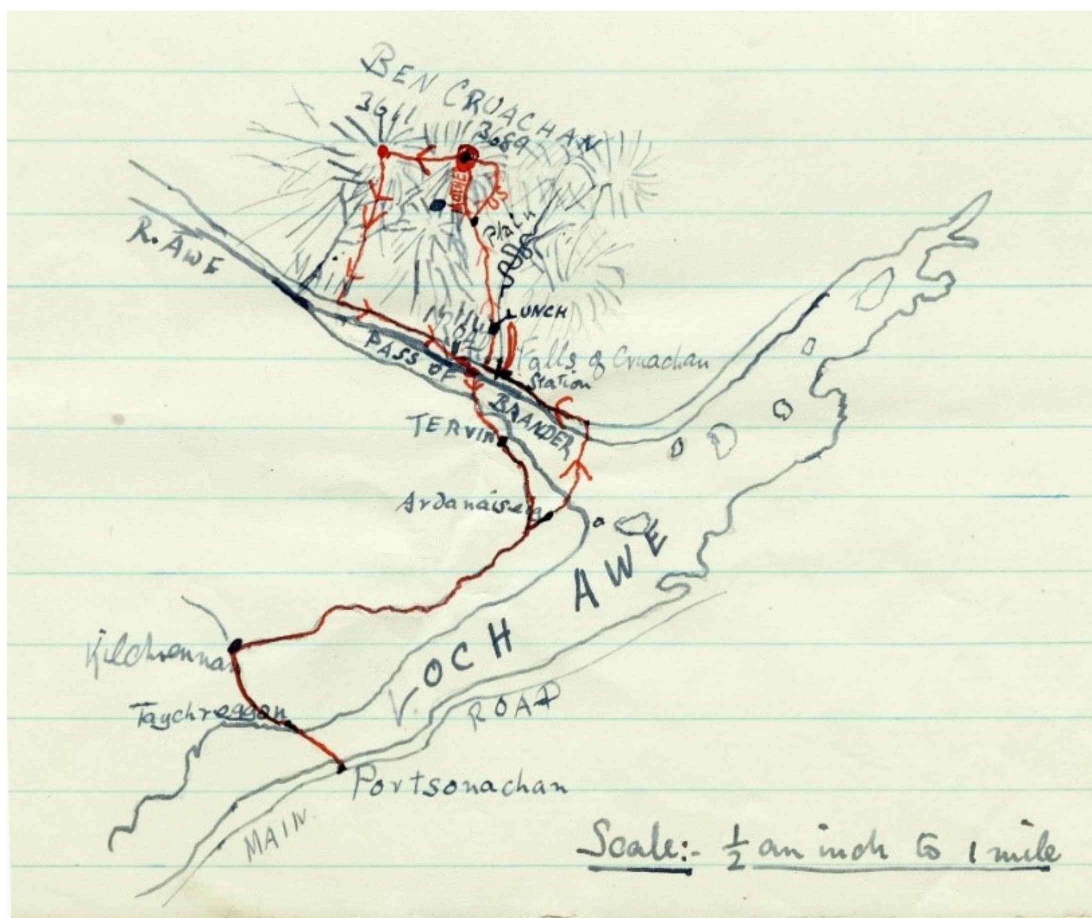
An object retrieved from the furniture store was the piano, of which I have no recollection before that time. My mother played rather well. She played Chopin and similar music and I remember one piece by a composer called Sinding. She was, however, somewhat handicapped by an injury to a finger which she got playing hockey. She must have been very good at hockey because, as she told me, she once played in the team representing Scotland, perhaps against England. The injury was to the fourth finger of her right hand, and led to a much swollen last joint of the finger, which I think was quite painful when she tried to use it for playing. My father had a good voice and

sang well, and it is clear that they played together many songs, mostly from the *Songs of the North*, though I remember an amusing Aberdeenshire song *The Lum Hat Wantin' a Croon* ('lum' = chimney, i.e. 'top-hat' and 'croon' = 'crown'). I still have the music of that song. I had had piano lessons at Cargilfield, but I made very slow progress, if any, and I got very frustrated. The furthest I got was playing very simple hymn tunes, which I must say I enjoyed doing, but I could never get them quite right all through. It is a pity that the teacher did not realise that I could not think vertically in music. I could not see all the notes of a chord together, and couldn't play anything by heart. I might have done quite well from the beginning if I had been given an instrument, even a violin, to start on.

I must now recount a holiday we had in the summer of 1927 when I was fourteen. We went to Portsonachan on the south east side of Loch Awe. We had the usual Highland house which was almost always by itself, there seemed to be no village there; and there were a few steps to the entrance of this house leading down from the road, and a few days after we arrived there was a downpour and Iona came running up the steps saying 'The water's in, the water's in.' I didn't know what she meant, but I looked down the steps and saw indeed the water was running into the house, and the maid was trying to scoop it out with a shovel. We had a boat as usual, and rowing on Loch Awe was marvellous. It was often quite rough and rowing up against the wind was very enjoyable, because one had all the time to keep a look-out and turn the head of the boat into any wave that looked big enough to come aboard. There was a wonderful view from there of the twin peaks of Ben Cruachan, and my mother said she would like to climb Ben Cruachan, which seemed to be possible from where we were, and I thought it would be wonderful. Portsonachan was just opposite a village called Kilchrenan, where there were other summer visitors. We had made friends with one family in which there was a boy of my age, I forget his name, but I will call him James, and we had found out that he would love to join us if we did succeed in going to Ben Cruachan. So one morning when the weather looked good, we set out, not very early, and first rowed across the loch to Kilchrenan where we picked up James.

We had taken our bicycles across the loch with us, and we cycled to the Pass of Brander which is quite close under Ben Cruachan, a distance of maybe ten miles. My mother had found out beforehand that there was a ferry which would take us across the loch at the Pass of Brander. It had to be summoned by some sort of a horn or claxon, and we did this and it duly arrived, a rowing boat of course, and ferried us across, but this took some considerable time. Once we were across, the climb started pretty soon, and was very steep at first. When we got about three quarters of the way up, a choice of route presented itself. One could either turn slightly to the left and go on to the top of a ridge which led easily up to the top of the hill. I, however, thought it would be quicker to go straight to the top, which meant climbing up a very steep and stony face, so we parted company, my mother went her way, and James, who said he would like to stay with me, came my way. My mother proved to be very right; she got to the top about an hour before we did. It was then getting quite late, so we did not stay long but came straight down, by her route of course, and got safely to the bottom. By that time, however, it was completely dark, and at first no one could be found willing to take us

across the loch. The man with the ferry said he couldn't possibly go out at that hour and in that darkness. Eventually, however, my mother found someone who agreed to take us across, though very reluctantly. The water of the Pass of Brander in pitch darkness looked very mysterious and sinister. When we were across, we got our bicycles again and started to ride back, but very soon we were met by James' father in his car, very irate at us being so late. It must then have been about nine o'clock. He had not expected us to be nearly so late. Indeed I do not think my mother had reckoned at all on how long this expedition would take, considering how getting across the pass and back again would take so long. However, eventually James was delivered safely to his parents, after which we rode back to Portsonachan. I do not remember that the maid was particularly worried about us being so late, as she well might have been, having been left with Iona on her hands all day. This expedition illustrates well my mother's adventurous but sometimes impulsive spirit, and my contrariness.

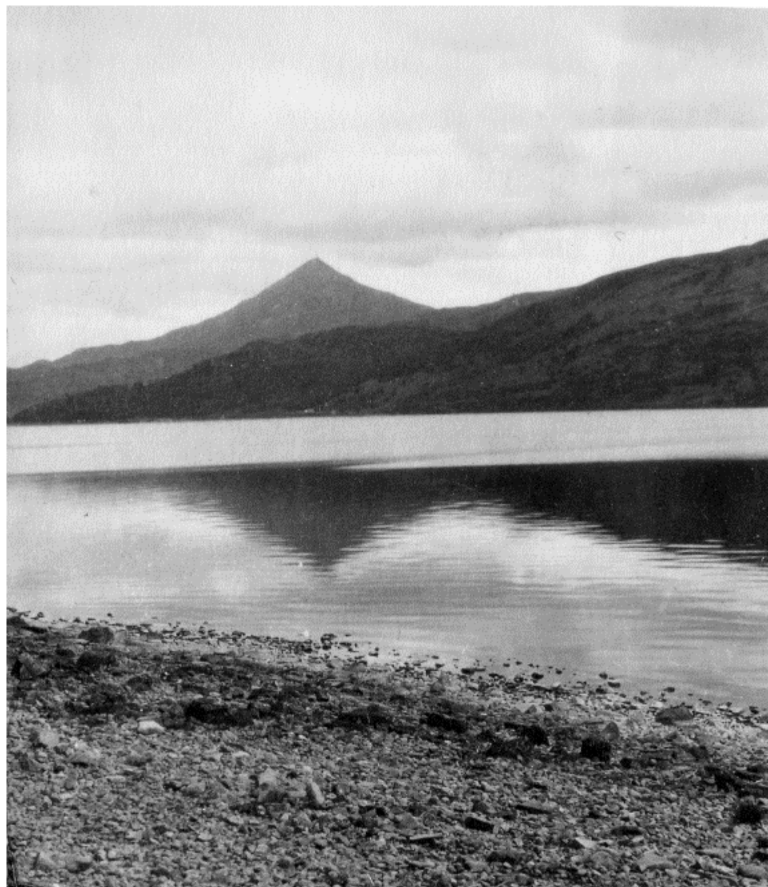


Drawn to illustrate his school essay 'On Climbing Ben Cruachan (15th Sept.)'
(An extract can be found in Appendix 2.)

Loch Awe and Ben Cruachan with Douglas and Iona, summer 1927

Douglas, Iona, 'Benjie' and a cat at Kilchrenan, Loch Awe, the following summer, 1928

From the roof of 38 Melville Street, June 1931



Schiehallion and Loch Rannoch, 1931

Two years before I left school we moved from Blackhall to a flat in Melville Street. We had the top two storeys, the rest of the house being owned by a bank. There was nothing remarkable about the flat. Downstairs there was a drawing room and dining room and kitchen premises with, I suppose, a maid's bedroom. We had a live-in maid, this time a more elderly person who looked after us very well. Upstairs the front room, facing north, ran the full width of the flat, and that was my room where I slept, worked and amused myself. One of the back rooms was Iona's. Facing south it had a pleasant view of the back of Shandwick Place with several churches, notably Saint George's West, which chimed every quarter of an hour throughout the day. The other back room had been converted to a large bathroom. My mother again had a very small room upstairs. I worked much harder then at my prep, and I don't remember how I amused myself, but it was mostly fiddling with things such as light switches, from which I got more than one electric shock. I remember, however, one very silly thing I did. I had a car battery which I used to run toys or something, and it was charged when necessary from a charger. I knew by then that charging an acid battery like that, when it was fully charged, produced gases, on one side oxygen and on the other hydrogen. There was a vent for these gases on the top of the battery. Well, I thought, hydrogen ought to burn in oxygen, so I put a light to the vent to see if it did burn, and surely it did, for there was a loud and powerful explosion. A little later at school I saw a demonstration showing that oxygen and hydrogen mixed in the same proportions as in water produced a very explosive mixture which in a school classroom produced an impressive bang. I did an equally silly thing many years later in Cambridge. I had just bought a new pipe and knew that the first smoke of a new pipe did not taste well and it had to be smoked till the inside was slightly charred. I thought I would save myself the trouble of having a not too pleasant tasting smoke, so I filled the pipe with tobacco and attached the stem to the laboratory suction system. Then I turned this on and lit the pipe and put it down, thinking I would have a well prepared pipe when I came back. A few minutes later when I returned, all I found was a neat pile of ash on the bench, and so I had to go out and buy yet another new pipe.

I must say something about the last summer holiday before leaving the Academy, because it had a sequel that may have been the cause of much later trouble. We went to Loch Rannoch at the west end to a place called Finnart. I do not remember my mother doing anything with me there, except going out in the boat and climbing Schiehallion, which involved quite a long cycle ride. We had what were then called rooms with service at a little farm, which meant that my mother ordered the meals and the farmer's wife cooked them and served them. We had milk from the local cow which had a huge swelling on one udder, but we thought this didn't mean much and we nevertheless had no other milk to drink. Walton Hannah came to stay with us for a short time. He and I did a very long excursion which I had not planned properly. We cycled to Rannoch station, took the train south to the next stop which was close to Ben Dorain, taking our bikes with us. Then we pushed the bikes up a rough track into the head of Glen Lyon. As soon as the road got good enough, we rode all the way down Glen Lyon, then crossed over northwards to the east of Schiehallion to Kinloch Rannoch and rode back again to Finnart; this was much further than I thought it would be and we both arrived

home pretty exhausted. Then William Dunlop came to stay a few days with us. We set out one day to climb Ben Alder, which neither of us had climbed before. This involved taking, riding and pushing our bikes up a rough track from the head of Loch Rannoch to the foot of Loch Ericht, which was quite a long way. When we arrived there we found a bothy with a roof on it where we ensconced ourselves, perhaps to have a meal. But when we were there, a shooting party came along, asked us what we were doing, told us this was private property and so on. We said we meant to climb Ben Alder. They said, 'Well, you can't do that, we're shooting there today.' So I asked, 'Well, where could we go without disturbing you?' He waved his arm airily in the westerly direction and I said 'Thank you', so we set off. This involved passing along the whole foot of Ben Alder, and the wind was blowing from us to the slope where the deer might have been, and I'm sure it must have sent all the deer off the side of the hill for the rest of the day. Anyhow, there was a nice hill there which we had neither of us climbed, so we went up it and near the top the mist came down. We arrived at the top and saw that there were three ridges running down from this top, and we hadn't the slightest idea which we should take to go back. Well, we were pretty sure that it was one of them, but we didn't know which one. Luckily I had a compass and a map and I was able to find out which of these two ridges we should take. This was very fortunate, because if we had taken the wrong way we would have landed up very far from any kind of civilization or road in the middle of the moor. So we got down all right and back to the bothy, found our bicycles and no trace of the stalking party, which was a considerable relief, and we got home without any trouble.

Loch Giorra, Glen Lyon, 1931

5. Nethy Bridge

In 1931 I went to St Andrews. My mother would have preferred me to go to Cambridge, but funds did not allow that. St Andrews proved to be a very good alternative, and I never regretted having been there. I had a very nice room in Dean's Court, a historic building between North Street and South Street at their eastern ends. But I had not been there more than about a week when I got ill, and it was to be five years before I could return.

A doctor was sent for and I was sent off immediately to the St Andrews hospital. There they were obviously worried about me, and told me very strictly I must lie very quietly and not do anything. They told me, or I think they did, that I had pneumonia, or possibly it was pleurisy. I had a high temperature and I didn't take in much of what went on round me. My mother inevitably came to St Andrews to make sure I was being properly treated. I suppose they must have told her of my illness, but I don't know if they expected me to die immediately. I recovered fairly quickly, and was soon sent home, and was taken in an ambulance back to Edinburgh. Back in the Melville Street flat my bed was arranged in Iona's room, which facing south was much more cheerful. I suppose she was put into my room. I continued to progress well, and soon my mother bought me a pipe to cheer me up. My father had smoked a pipe, and I think she must have seen it as a manly occupation. It must also have made me seem more like my father. When I was sufficiently recovered, our doctor said I ought to go to Strathspey to convalesce, so I studied the one inch ordnance survey maps and decided that Nethy Bridge would be the best place because there were so many tracks and roads through the forest, more than any of the other places. So there we went. A house was rented, a typical highland house, two storeys, and I continued my progress. I had been told that short gentle walks might be a good thing. On one of these walks I started to get a severe pain in my hip, which got worse, and a few days after I got back I was really confined to bed because I couldn't walk. The local doctor was called, a Dr Marr from Grantown-on-Spey. He was very nice and I think pretty competent. He thought that I had tuberculosis of the sacroiliac joint, which is one of the hip joints. He put an extension on my leg, which meant hanging a weight on the end of the bed attached to my leg, which pulled it out. That made the pain much better, and after a short while it pretty much disappeared. But the injunction to take things very easily was repeated, as it was many times later. We then moved into a different house which was nearer the forest and the tracks going through the forest. It was a more comfortable and slightly larger house. I don't remember that we had a domestic servant, but maybe we did, at least a daily. But my mother had got the daughter of one of her friends, Iona Houston, to come and join us to help look after me. She was a lively girl, I think about a year older than me. I thought she was very stupid, but we had good arguments which I much enjoyed. One I recall was this: the subject of mountaineers walking under cliffs and having stones fall on them was raised for some reason or another, and the question was, if you were in this situation, would it be better to walk quickly past the cliff, or to go slowly. She argued

that you must go slowly, because if you went fast you might run into a stone as it fell, but I argued that the principle was that the longer you spent under the cliff, the more likely you were to be hit by a stone, so the right thing to do was to go as fast as possible. She would not see the logic of this solution. I think that my mother felt she would be a suitable wife for me; she certainly came from the right class, her father being an army colonel. But the thought never crossed my mind. I spent most of the time in bed, but we had a few wanderings in the forest from time to time.

The question then arose in my mind, what should I do, and I thought a good thing would be to learn about flowers. I knew quite a lot about birds, but not about flowers, so I got a book, I don't know how I knew what to get nor how my mother got it. It was by Bentham and Hooker in two volumes,[12] one with line drawings printed on paper suitable for water colouring, it being supposed that some people would want to colour the flowers that they found, and I thought this was a good idea, so started doing it. It occupied a lot of time, because there were none that I knew. It took quite a while to identify a flower for sure. I mean, one knew a daisy was a daisy and a dandelion a dandelion, but there were lots of other things that looked pretty like dandelions, and the question was which. My colouring was very poor at first. The first thing I tried was a daisy, which was not a success, but it gradually improved as I went along. I spent a lot of time for many years painting in the flowers that I had not previously found. I had a radio and I followed the BBC course on elementary German. I did not get very far with this, but I did learn the elements.

After some time I improved. I began to feel well and there was no pain. The doctor said I was on the road to recovery, that there was no need to stay in bed all the time, and that I should gradually increase my activities. So Iona Houston having left, we went into less expensive accommodation. We first lodged with the local shoemaker, or rather shoe repairer, called Gregor something and his wife.[13] Mrs Gregor was a plump, motherly and very kind woman, and we had some rooms in an annexe of their house. Gregor had a little workshop in which he sewed boots and shoes; I don't think he made them. It had a wood stove in it which made it very hot, and it smelt of leather and other things. He was a very interesting man to talk to. He had read a lot, knew a lot more about life than I did, and had his own opinions on philosophy, biology and other things. When he had an opinion to express, he always prefaced it by 'What I think myself, man,' and 'Wells says' and so on. He had evidently read a lot of H. G. Wells, which I certainly had not. He taught me to sew leather. He sewed it with two threads, one on each side, but he did not use needles to insert the threads in the holes; he used cat's whiskers, real ones. He first made the thread sticky with resin which he called rosin, and thinned the ends, twisted them round one end of the whisker and then pushed the whisker through the hole pulling the thread after it. He did the same thing with the other thread from the other side, pushed it through in the opposite direction, which made a very strong sew, much better than machine made sewing, and I have later done much leather sewing with

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[12] G. Bentham and J. D. Hooker, *Illustrations of the British Flora,* L. Reeve and Co., Ashford 1931.

[13] This was Gregor Grant, who lived in Juniper Cottage. https://nethybridge.com/history/juniper-cottage/ (accessed 15 Jan. 2020).

Bentham and Hooker's Illustrations of the British Flora, *coloured by Douglas*

the same method, but using needles instead of cat's whiskers. I sometimes used to accompany him to the forest to collect firewood and kindling wood. The stumps of felled pine trees accumulate a lot of resin in the stem, and all you had to do was to axe the stumps and break off bits of them. These were so inflammable that they would light with a match, so they were used for both kindling and firewood.

One event from that time sticks in my memory. There was a sort of fair or games in which there were a number of competitions, and I entered for one competition, nail-driving. A large nail, two inch or more, was started in a stump of wood, and we were given a hammer and had to drive the nail in right up to the head, with as few strokes of the hammer as possible. I managed to do it in three, which surprised me quite a lot, and

it turned out I won the competition. The locals were horrified to think of an invalid boy from 'the toun' beating them at what they must be better at doing, and I must say I felt a little ashamed at having done it, but I was pleased all the same. We did not stay long at the Gregors because a more suitable house to rent became available, a wooden bungalow, called The Cottage or some such, set in the forest with pine trees all round. It was very small, with two rooms with bedrooms attached to them as annexes, and presumably a kitchen. I slept in a tent there because it was thought to be more healthy. A tent was ordered from Calders of Leith, a heavy canvas one with a good thick groundsheet which we still have and use. One night I was awoken by screeching and scrabbling on the side of the tent. Two cats were fighting there just above my bed. So I gave them a whack with my fist from inside, and they fell off and ran away. While we were there I think I spent quite a lot of time in bed, though we did take walks and my mother had a car. It was an open four-seater Austin and we took short drives in the forest. We occasionally had a donkey and a trap to go short drives (she was called Coupie). This provided a change of occupation but it was a little frustrating. The donkey went very slowly and could not be coaxed to speed up when going out, but coming home she made a fairly good pace.

I occupied myself for some considerable time in making a bamboo penny whistle or pipe, quite a low-keyed one in C like a flute. My mother went to Inverness to get me some suitable bamboo, which she succeeded in doing, though I've no idea how. Anyway, it was just the right width and the right length. I fitted a cork to it for a mouthpiece, like a recorder, and I cut the finger holes with my penknife. I measured out proportionate distances taken from a penny whistle and I gouged the holes out to be as wide as possible, so that you needed the whole pad of the last joint of the finger to cover them, because I thought the wider the hole the clearer the tone, and I tuned them entirely by ear with the penny whistle to help, but it turned out all right. I played Scottish songs on it and that sort of thing. Unfortunately, I've now lost it. As I always do when I lose something, I think I must have lent it to someone, but I do not know.

I went by car on a trip to Plockton on the west coast. I had seen an appeal for helpers in a camp for disadvantaged youths from Glasgow. I thought that this might be a good thing to do because I had always wanted to do something useful in the way of social work. So I offered myself but said that I could not do hard physical work. They replied that they would be delighted to have me and I went. When I presented myself and met one of the men, I asked what I could do. He said, 'Well, there's a pile of logs there and they need chopping.' Feeling rather embarrassed I said I was sorry I could not do that, was there anything else? He then said that their outboard motor which they needed to get supplies from Plockton village had broken down. Could I mend it? I said I could try. So he fetched it up from the boat. There was a fairly well equipped workshop where I could work on it fairly easily. I took it to pieces and found that the shaft that drove the propeller was completely seized up by oil that had burnt with the heat. So I scraped and sandpapered off the oil as well as I could, put lots of fresh oil in it and put it together again, and it went, though I did not then know for how long it would do so.

Douglas and Iona, Nethy Bridge 1932

Nethy Bridge, winter 1932–33

Lillias, Nethy Bridge 1932

'Coupie' and Lillias, Nethy Bridge, 1932

After this I asked if there was anything else I could do and he said, ‘Could you make us a hand-loom? I’ve got an old one you could possibly copy.’ It was a thing about a foot or eighteen inches wide and would make ties and scarves. There were lots of scraps of wood in the workshop and I managed to put together some sort of imitation of the old one. It took quite a long time and I never heard whether it actually worked. I spent about a week on these two jobs and then went back to Nethy feeling that I had really done something useful.

We went on two camping trips to the west, the second of these was to Mellon Udrigle, a magical place, where the pain in my leg returned, which was very disappointing, and we had to return to Nethy Bridge. While trying to get away, the car would not go and I had to look at what was wrong. I thought the petrol was not getting from the carburettor to the engine, and though I did not know why, I tried putting a little bit of wire under the carburettor lid to let in the air, and that worked so we got home all right. I thought, ‘I can’t go on like this, I must do something different.’ I thought it would be a good idea to go somewhere where I could be told quite strictly what I should do and what I should not, probably to a sanatorium, and it was agreed that this would be the best thing to do.

So I went to Tor-na-Dee, a little way up the Dee valley from Aberdeen. This was in February 1934, and I stayed there until September. Most of the other patients were pulmonary TB patients, and I saw almost nothing of them. I had a room of my own where my food was brought to me, and I stayed pretty well all the time in bed. I had a nice view out of the window of some smallish fir trees and quite a lot of sky, and I watched out a lot of the time for birds, I counted the number of species I’d seen from my bed, and I think the total came to fifty, which wasn’t bad. My mother, as of course she would, came to live nearby. She helpfully brought me flowers to paint and I got a few new species there. I had a radio and listened a lot to the Third Programme. My taste at that time was pretty well confined to what one would call easy listening music, such as is now played on Classic FM. I think Strauss waltzes were my favourite, but I heard a lot of music in that way. I remember being visited by Aunt May sometime while I was there. Her constant plea, as it always was, was ‘Be careful, take care of yourself.’ I must say here that never for a moment during my illness did I doubt that I would recover. The only thing was that it was taking longer than I thought it should.

6. Leysin

After I had been in Tor-na-Dee for six months or so I got very impatient and thought I must do something else. At that time the fame of sanatoria in Switzerland was widely known, and I thought I would like to try that, and so after presumably getting advice, a famous doctor there who was in charge of the sanatoria was applied to. He was a Dr Rollier, and his clinics were in Leysin. By that time Iona was also found to be suffering from TB of a gland, and of course our suspicion was that it must have been that cow on Loch Rannoch that had given it to both of us. So it was obvious that she would also benefit from treatment in Switzerland. She and my mother must have had a pretty awful time during those years that I was ill. So in September of 1934 we went to Leysin. I do not know how this trip was financed, because of course everything had to be paid for. Presumably the Melville Street flat was sold, which released some capital, though it must have made inroads on my mother's available capital.

The journey to Switzerland must have been a daunting prospect for my mother. She had never been abroad before, and spoke very little French, not much more than a few words, and knew no German. Though I knew a few words of German and could say a little, and the same in French from school, I certainly could not speak either language. We had a nurse to accompany us on the journey. I thought this was totally unnecessary, but this nurse must have been a considerable comfort to my mother. From Paris we had a reserved compartment to ourselves, which made the journey rather more pleasant. Leysin is on the slopes above the Lake of Geneva at its eastern end, so we went along Lake Geneva and saw the Château Chillon, and then at a place near the east end we changed into a funicular railway which took us up to Leysin. It was night time or dull when we arrived, and we could see nothing of the surroundings. We went to my clinic which was called Les Hirondelles. There we were greeted by a welcoming nurse from Glasgow, according to her accent. She had been a patient in Leysin and after her recovery she stayed on as a nurse, so her welcoming us was a great comfort because by that time we were very tired. Then Iona went to her sanatorium which was quite close and we could wave to each other from the balconies, and my mother found accommodation in a small hotel. In the morning when I looked out of the window, the view was quite astonishing. We saw over the valley to high peaks already snow covered, with the Dents du Midi the main features of the range. The sun was shining brightly and my spirits rose immediately. Here I thought was the right place to be. The atmosphere in the clinic was cheerful and quite different from Tor-na-Dee. I had a room one removed from the end of the balcony which stretched undivided along the whole wing. I was soon given special pillows to lie on filled with millet seed, the main one was a square one with a large hole in the middle, and I must say it was very comfortable. There was one under the knees and another under the head, and I think one in the small of the back. I had to lie on my back like this. We were exposed to the sun very gradually, I think it was the legs for ten minutes on the first day, and gradually increasing till in the end we spent the whole day with sun on the whole of our bodies.

Les Dents du Midi, 1 November 1934

From the gallery of Les Hirondelles sanatorium Leysin, 3 December 1934

Alpine Chough, Leysin, 1935

Mammato cumulus clouds during thunderstorm, Leysin, 7 August 1935

Soon after we arrived, Iona got very unhappy in her clinic, and although I knew that the clinics were pretty strictly segregated, I asked if it would be possible for her to come into the empty room next to mine. They soon agreed, and they fitted up a wooden partition across the balcony to screen hers off, with a door in it through which I could negotiate my bed, so life became a good deal easier when Iona was happy. I had a very nice neighbour in the next room, a Frenchman called Paul Berter, whose father was headmaster of a distinguished school in Paris. Paul was about my age. We spoke French and English on alternate days, and I made fairly rapid progress in conversational French and could soon get on fairly well. In the next bed along from Paul there was a large Cockney from London who'd been sent there by his council, I think he had pulmonary TB. He left there fairly soon having been cured. Paul and I had a lot of fun conversing. He had some records of popular French songs. Unfortunately I can only remember the first two lines, which were these: 'C'est un vieux château du moyen âge/ Avec un fantôme à chaque étage,' and there followed amusing and partly blood-curdling accounts of the events of the night. I read quite a lot, though I do not know how I knew what to read or how I got the books, but I only remember one, *The Theory of the Gene* by the American geneticist Morgan. It expounded Mendelian genetics and its subsequent development.

My mother went on bringing me flowers, and I spent quite a long time studying them and identifying them, many species of course being quite new to me.[14] To do this I had to get a proper book and I got a book called *Flora der Schweiz* by two botanists called Schintz and Keller. It was terribly technical and I had to learn all the German equivalents of the English jargon, most of this being written in abbreviations, so to identify any particular flower required a lot of hard work to learn what the terms meant. Any of these that were also in the British flora I painted in my Bentham and Hooker. I also kept a look out when I could for birds. The chief new birds were the Alpine chough, or choucas as they were called. They came on to the balcony every day to look for scraps of food. In the spring there were chaffinches below the balcony, and I made some notes on the behaviour of these. There were two within earshot, singing males, who sang slightly different songs, and I made notes of the length of these songs, the period between each and the time they went on singing, and I noticed that the bird nearest me later on borrowed songs that were characteristic of the further away bird and incorporated them into its song. When later I went to Cambridge I told one of the staff in the zoology department this and he thought it was very interesting and said I ought to get it published, so I wrote a little paper and got it accepted by *British Birds*, and that was my first published paper.[15] Reading it later, I thought it was pathetically amateurish, but there had up to then been very little study of bird behaviour, particularly songs. So I occupied myself very happily with these pursuits.

Another thing I did was to follow a course based on psychology which I saw advertised. It was referred to as auto-suggestion, and it promised that it would enable you to alter any features of your mental state that you did not like, and what I

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[14] A few of Douglas' drawings of these flowers are reproduced in Appendix 1.

[15] 'Observations on the singing of the Chaffinch' in *British Birds* (1942) **35**, 98–104.

particularly wanted to do was to get rid of my shyness, and the dread I had of ever having to speak in public. I thought that I could never pursue a career in biology unless I could speak in public. So I followed this course pretty seriously over a number of weeks, reading the lessons seriously as they came, and it worked. The technique was to lie in bed and to relax all muscles and as you went to sleep you said things to yourself asserting what you wanted to be like and you saw yourself in imagination as behaving in that way. There was of course a lot more, but that was the gist of it, and as I say, it worked, because I was able later to speak without any diffidence.

Another little experiment with birds that I should have mentioned was this. I had a folding shaving mirror and I set it up on the edge of the balcony to see what would happen when birds came and saw it when they strutted along the balcony. The chaffinches were the chief ones there, and when a male saw itself in the mirror, it attacked it and pecked and pecked and pecked at its image, and went on for a long time before it gave up in disgust and went away. A blue tit, however, looked at its image and immediately ran round to the back of the mirror to see what was there. It found nothing there, so it came back, looked in the mirror again and saw the same things, so it went round to the back of the mirror and then flew away. One can't help feeling that the chaffinch was very stupid, and the blue tit much brighter, but the explanation may not be quite so plausible. Chaffinches are highly territorial and their instinct is to chase away and frighten any rival that they see, whereas blue tits, I think, are not so territorial and would not have this instinct so firmly for attacking possible rivals.

I was X-rayed regularly to assess progress, a thing that had never been done in the past. It was easy to see what they were looking for in the X-ray. The joint between the two bones, the sacrum and the ilium, on the left hand side, was clear and well defined, forming a neat straight line. On the right side, however, the line was fuzzy, suggesting that the bone had been eaten away in parts of the joint. After about a year, on the basis of the X-rays, I was told to go out for walks, have a little exercise, and I remember my delight at being able to climb up a little ravine behind the sanatorium where I saw for the first and only time a wall-creeper, which is a really spectacular little bird, and we were soon told to go away for a short holiday. Iona by then was cured, or nearly so. It was the general atmosphere of cheerfulness and the sense of well-being induced by the sun that had cured me, not any special sophisticated treatment. It is now well known that the immune system is very subject to influence from mood, so it was my immune system, when suitably galvanised into action, that had cured me. For the little holiday we were told to take, we went to Gunten on Lake Thun. I remember almost nothing about that, except that it was nice to get away and do something else, and do a little walking, but it was a pleasant place. After that, sometime in April 1936, we were told that we could go, so we set off for home joyfully. On the way we spent a few days in Paris, and saw the Eiffel Tower and went to the Opéra, or maybe it was the Opéra Comique. I do not remember what else we did.

Back in London I was sent out to buy a car, second-hand, of course. I looked at quite a number available at the dealer I went to, and finally chose a very unsuitable Morris, mainly because the price of £44 seemed to me very good, and when my mother and

Hotel du Lac, Gunten, 1935

View of Simmental from Hotel du Lac, Gunten, 12 August 1935

Iona saw it, they were horrified, and did not see how we could possibly fit into it. But we did, all three of us squeezed into the seats and the small luggage was coaxed into the boot. The two large suitcases were hung across the bonnet by a strap, and we set off to tour parts of England. I don't remember where we went or what we saw, except that I think we went to Devon first. Then we made our way back to Edinburgh. The car went very well and gave us no sort of problem, so my choice was in that respect vindicated. When we arrived at Uncle Scott's he snorted in indignation and said, 'You can't go about in that car, I must get you something suitable.' So he took the car and came back a little later, or the next day, with a Wolseley four-seater saloon which was very comfortable, and we set out in it to go to Nethy Bridge. At first it went very well and smoothly, but after a hundred or two miles it faltered and obviously had to have something done to it. I guessed it might have been dirty plugs, so I took them out, all six of them, and cleaned them, and then it went wonderfully again, but the plug cleaning had to be repeated again every hundred or two miles, and I soon got quite efficient and quick at doing it.

We spent the summer at Nethy Bridge, but I have little recollection of what we did. We made another camping tour, and the only other thing I remember was going myself to look for and paint a flower that I had never seen. This was a heather called *Menziesia Caerulea*. It was very rare, at least in Scotland, growing in only one place, on the Sow of Atholl, which is a little way south of Dalwhinnie. I went alone in the car and I climbed the hill, not very high, and found it very near the top. I think now that I must have been a little rash and over-confident of my cure to have embarked on climbing even such a small hill. I took my paint-box with me and painted the flower *in situ*. Because of its rarity I did not want to pick even a small piece. I got back with no mishaps and never had any bad consequences of the climb.

Bentham and Hooker, *Illustrations of the British Flora*, Menziesia caerulea

7. St Andrews

I went back to St Andrews in 1936. I soon found that being five years older than my contemporaries gave me a great advantage in all the activities in which I participated. I won the class medal in all the classes I attended except first year chemistry and honours zoology, in which I was the only student and no medal was awarded. My main subject was zoology, and I won't say anything about the other courses. The first year course in zoology was taken by the professor, D'Arcy Thompson. His lectures were so fascinating that I could not take time off listening to write any notes, and I very much regret having no notes of the things that he talked about. He seemed to talk about whatever came into his head while he was walking to the laboratory, or it might be that the lab technician had brought in some dead specimen from the shore, and he would deliver on the spur of the moment a whole lecture on that corpse. There seemed to be no direction in his lectures, and after a while I began to worry whether I would cover the syllabus – there seemed to be no syllabus. So I found that there was a book that covered what was supposed to be the syllabus, which was very dull but very thorough, by a man called Grove from London, for whom I later worked for a short time. So I got this book and read it and felt I was now reasonably well equipped.

In the lecture room there was a series of glass cases round the walls in which museum exhibits were shown. There was a bit of space on these shelves, and I asked D'Arcy if he would like me to try to mount an exhibition on his book *On Growth and Form*. He said he would be delighted, so I set up such an exhibition, occupying about six feet of space. For one of the items I blew bubbles in a Petri dish of soapy water, and photographed them. This illustrated the structure of a honeycomb. It was all very amateurish and limited, but he seemed to be very pleased with it. The second year zoology courses were held not in the lecture room but in the laboratory. There were about six students. There were two lecturers who did all the work. One, Chris [Christine] Sutherland, was oldish and very uninspiring. I used to take text books into the lectures to look at the diagrams of what she was talking about, because she never wrote on the blackboard, and one day I noticed to my horror that the words she was speaking in her lecture were exactly those I was looking at in my text book, so for what seemed like a whole lecture she had simply read from the book, so that was why she was so uninspiring. The other lecturer was a younger person, Kay Fleming. She was enthusiastic about her subject, and did her best to teach me something. She was interested in marine zoology, which was what I was getting interested in, and she helped a lot with that. She later went to Edinburgh, to the zoology department there, and married Henry Adam, and we became great friends with both of them later.

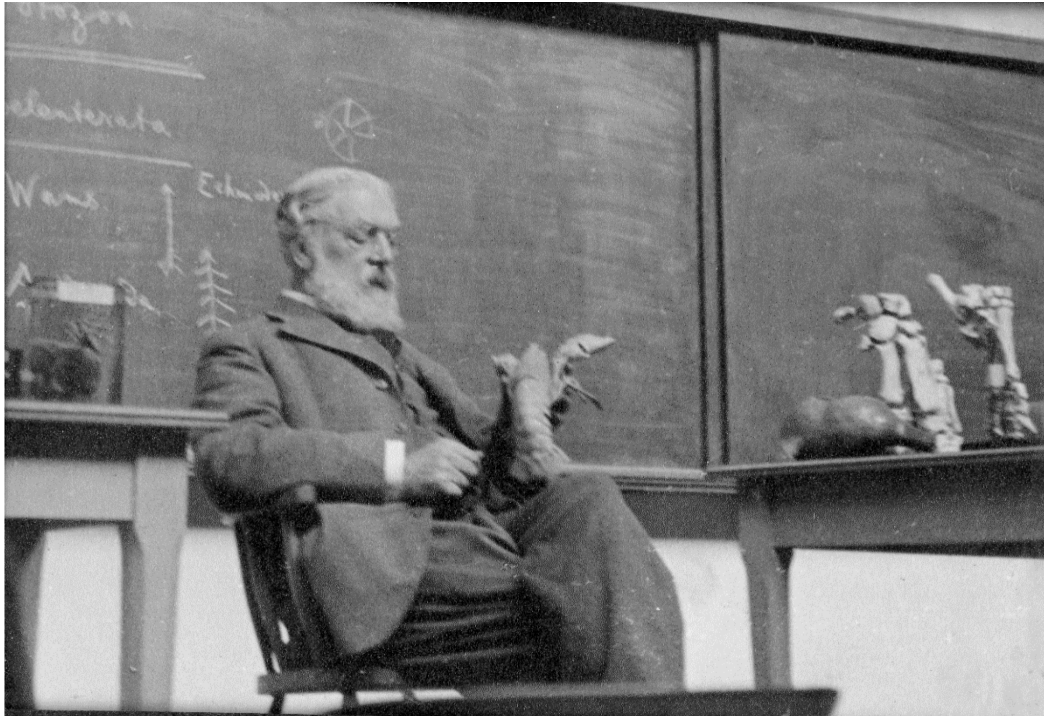
In the honours zoology course, D'Arcy presided over it but did almost nothing. I asked him at the beginning for recommendations for what books I should read, and he said, 'Just browse, my boy, just browse,' so I worked away on my own, not having any syllabus to follow but following what I thought might be useful. He obviously approved of me a great deal, and at the end of the year, he came along to me and said, 'Well,

Douglas, my boy, you're a very good lad and I don't think we need give you an examination this year.' So I thought, well, that sounded good, but then I wondered later, could I really get a degree without having done the final examination. So I went to the Dean, who was the Professor of Botany and not at all on good terms with D'Arcy, and asked him, and he said, 'Oh no, no, I'll see D'Arcy, you'll have to have an exam.' So a few days later D'Arcy came to me and said, 'Well, I'm afraid that man Graham has us beat, and you'll have to have an examination after all. Now tell me, what have you been working on all this year?' So I said to him rather surprised, 'On marine zoology,' and in the event there were only two questions on this in three or four papers. Nevertheless I got a first.

D'Arcy was an astonishing man; he was a brilliant after-dinner speaker, or speaker on any occasion. He spoke without notes and it seemed that he was making the speech up as he went along, but in fact from his biography I discovered that he spent a long time preparing all his lectures. He told me that when he was first appointed to Dundee, as it was then, not St Andrews, there were three chairs advertised at the same time, and he applied for all three of them, or any one of them. They were Greek, Mathematics and Zoology, or as it was called then, Natural History, and they offered him his choice, he could have which he liked, so he said to me, 'I chose Zoology because it was the one I knew least about.' Before I left he made me a present of his personal copy of *On Growth and Form* with marginal notes in his own hand, destined, I think, for the second edition. It was very generous of him, and I have treasured it ever since.[16]

At the beginning I joined three student societies. There was the Biological Society which was pretty dull. They were funded from subscriptions, enough to invite one or two lecturers per term, but I don't remember that we ever had a good one chosen. Then there was the Musical Society which I enjoyed very much. There was no professional musician on the staff except the chapel organist, and he did nothing to help the society. There was no instrumental playing, either organised by the society or by him. There was, however, a small choir which I ran, and we sang part songs such as *Heraclitus*, *Bobby Shaftoe*, and things like that. I conducted these with great pleasure, though with how much success I do not know. Then I was elected President, as I was also of the Biological Society, and the President has to give an address at the end of the year, which I rather dreaded because I really had nothing to say, but I thought I would talk about the difference between technique and musical understanding in the performance of music. There was a student who was an organist, and she played technically absolutely marvellously, she could ripple through everything, but there was no soul in it, she didn't seem to know what the music meant, and I longed to have her play with both soul and that technique. She was the model for what I had to say, and I hope she was not recognisable. I don't think I said anything except point out that there have to be both of these abilities to make good music. The chapel organist did, however, once run a course on musical appreciation. He had set up in a lecture room some reproducing apparatus, I think it was electronic, it wasn't a horn gramophone, anyhow, and he played us symphonies and pointed out what themes to listen for and so on. He was

[16] Given to the St Andrews University Library in 2001.



Professor D'Arcy Thompson, St Andrews

The Pier, St Andrews, late 1930s

St Andrews Cathedral, late 1930s

St Andrews, East Sands, late 1930s

particularly attracted to Schubert, and he once referred to Schubert as the composer's composer. Anyhow, I learnt to appreciate symphonies from him.

The Musical Society occasionally had visiting lecturers whom we invited. I remember only one of these, and it was very embarrassing. I was not then President, but certainly was an office-bearer of some sort, and Imogen Holst was invited to talk to us. The audience consisted of the office-bearers and three or four, or perhaps up to six of the other members. Nobody knew anything of Gustav Holst or was interested in his music, and she gave what I thought was a terribly dull lecture, and I felt very embarrassed about us having invited her, and from what the President told me later, she made her views known to him clearly. Thirdly, I became a member of the local branch of the SCM (Students' Christian Movement). Curiously, all three office-bearers were non-believers. We were all trying to find a way to restore our previous beliefs, but I don't think any of us found it. My disbelief started when I was at school, when I found I could not repeat two statements of belief in the Creed that were said in church, one 'into Hell' and the second 'the Holy Ghost', and I always left these out when repeating the Creed. I don't remember much of what we did in the SCM, except that we attended conferences. Another thing was that some members went out to villages to conduct services for people who were not able to get to church. I never did this, but I was once asked to go and play the harmonium for such a service. I said I couldn't because I couldn't play well enough, but they persisted and finally persuaded me to agree. I went there earlier and found out how to blow the bellows of the harmonium and how the few stops worked. So, feeling considerably embarrassed I struggled through the hymns, leaving out many of the notes and putting in a few that should not have been there, and the service came to an end without my having completely broken down.

Two people at St Andrews became lasting friends. One was Ronald Cant,[17] who was in charge of the hostel in which I was living, Swallowgate, which had been a large private house before it was converted. We kept up our friendship afterwards, and he subsequently became my best man at my wedding. The second was Ian McFarlane.[18] He was studying French, and he had a passion for organ music, of which he had many records, and I often joined him to listen to them. There were Bach toccatas and fugues, and I particularly remember a Widor toccata. He was taken prisoner in the war and spent most of it in a prisoner of war camp. After the war, he applied for a lectureship at Cambridge. When we were in Edinburgh he called one day and said he'd been called for an interview, but that was on what was to be VJ Day, and he thought he shouldn't go because there would be no interviews on such a day (he was still in uniform). But we assured him that Cambridge would not consider that a reason for stopping having interviews, and that he really must go. So go he did, and he got the job, so that was very satisfactory.

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[17] Dr Ronald Cant (1908–99), lecturer in Medieval History, later Reader in Scottish History at St Andrews.

[18] Ian D. McFarlane (1915–2002), later Professor of French at St Andrews and subsequently at Oxford.

R. G. Cant at Swallowgate, St Andrews, 1939

The best and most important event that happened at St Andrews was the consequence of recorder playing. There was a lady called Miss Gillespie who lived in College Street, and she invited people to her house to play recorders together. At one of these meetings I was introduced to Margaret Duke, who taught classics at St Leonards, but it was to be two years before we could get married.

I did some rock climbing at St Andrews, mostly by myself, but once on the May Isle. There was a stack on the beach not far from the town which provided very good climbing. There was a moderately easy way up which we called 'the tourist route', but there were many other ways to get up, and I explored all that I could find. One time I nearly fell off, feeling my fingers give way on the only hand-grip I had, but I just managed to rush my hand to a neighbouring hold and got down. Many years later when we visited St Andrews on holiday, we went to the Maiden Rock, and I thought I would go up it again, but by the tourist route, but I had not got far when I discovered I could not do it, and I felt very ashamed. At that time I suppose I was about forty, but had already lost some of my sense of balance and so was defeated. One of the staff, Professor Turnbull, a mathematician, was a much more experienced rock climber, and he took a party to the May Isle to climb the cliffs there with ropes. There was one pitch I went up second on the rope after he had got to the top. I found it quite easy and got up there pretty quickly, but the person who came next to me was finding it very difficult, and on the top I saw Professor Turnbull on his knees peering over the edge to see how this chap was getting on with the rope loosely hung over his neck and not attached anywhere. I was horrified and quickly gave the rope behind him a hitch round a rock, which he fortunately did not see me do, but the chap got up without any trouble.

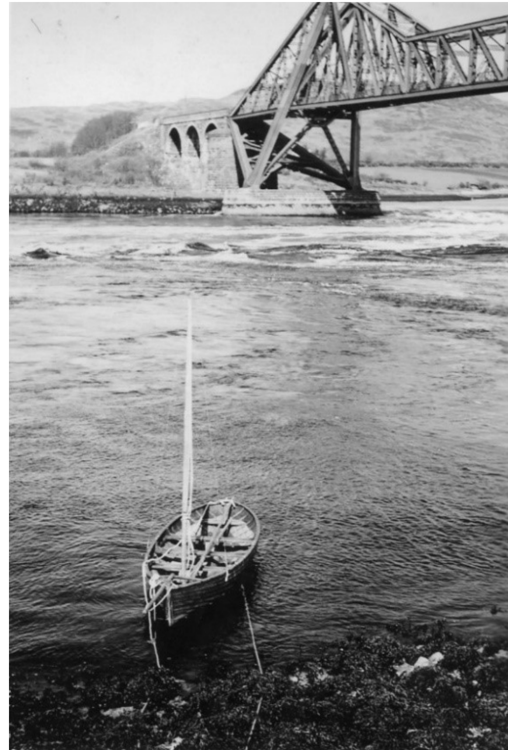
Professor Turnbull asked me one summer if I would like to join his brother on a boat which he was proposing to sail from the Thames down to Cornwall. He had bought the boat recently from a Cornish fisherman and converted it for cruising, and he brought the

Yacht 'Irene' on the Thames, June 1937

'Irene' under sail, Falmouth, June 1937

Douglas cooking on the yacht

Ward Hill, Hoy, geological survey expedition, June 1938



Connel bridge, April 1938

Connel bungalow, April 1938

former owner, the fisherman, with him to act as skipper. Of course I said I would be delighted to do this, so I went off to join them at Malden on the north side of the Thames, and we set off to go to Dover on the first day. I was keen to learn all I could about navigation, and so I took bearings and plotted my position on the chart as we went along, and soon saw that we were heading straight for one of the sandbanks in the Thames estuary. The skipper did not seem to pay any attention to the navigation, nor indeed did the owner, but I told him what I thought was happening, and he said, 'Oh well, you put us on the right course and we'll go,' so I changed course as I thought fit to avoid the sandbank, and indeed we did avoid it after scraping along the bottom for a short way. We spent the night in Dover and another day there, and I went along the cliffs looking for flowers, and I found a few that needed painting. On one of these walks I came across a number of official looking men with ropes looking down the edge of the cliff. Being intrigued and thinking that there might be another opportunity to do a little rock climbing, I asked if they needed any help, so they told me that a girl had got stuck in the middle of the cliff and could get neither up nor down, and they could not think what to do, so I offered to go down and tie a rope on to her. They were delighted and thanked me for offering. So I attached a rope to myself which they were to hold and took another one to abseil down the cliff with. It wasn't a really steep cliff, and I got down very easily and reached the girl who was a young woman, very frightened because she was stuck. So I tried to reassure her, tied the rope with an official bowline round her waist, and told the people on top to pull her up, which they did. I think she got a few knocks on the stones as she went up, but she was all right, and I pulled on my rope and got up hand over hand, it was very straightforward. They thanked me and asked what my name was, but for some reason I didn't want to tell them, and didn't. But the next day there was a paragraph in the local paper describing this rescue by a young man.

So we sailed on. I soon found that as well as navigator, I had to act as engineer. The engine kept giving trouble and sometimes stopped, and I had to go and tinker with it to make it go, which I managed to do, but some time later I could not make it start. However hard I tried, I could not understand why it wasn't going. So I tried the trick with a little piece of wire that had worked on our car at Mellon Udrigle and again it worked. But I felt terribly sick, and was sick, working in the smelly engine hole that was really just attached to the cabin, but it was curious because when working hard like that I didn't feel ill, I just suddenly had to be sick. I think that was about the only experience of sea-sickness I have ever had. We cruised slowly down to Plymouth, and there I got a telegram from my mother to this effect: 'Got Connel cottage', and I think this implied I must go and join her, because I knew she was house hunting and was going to look at a house in Connel. So I had to leave the ship and go and join her. Fortunately the owner's son was at this time on board, and I thought that he could perfectly well cope.

So I set off, planning to go to London, and then get a train from London to Oban, which I knew existed, but when I was waiting for the London train on the platform, another train pulled up, clearly labelled on the outside 'Oban', so I didn't know what to do, should I get in this train trusting that the label on the train was correct and that it would take me to Oban, and would the tickets that I had bought be valid, and in the end I funked it and didn't get in, so had to go to London and then get another train to Oban. The house at Connel turned out to be just to the west of the bridge. It was a bungalow, set on a little heathery mound about fifty yards from the road, which seemed to me a very nice house. It had no electricity, but it had its own generator which managed to make a rather feeble light and took a good deal of trouble to get going. The best part of it as far as I was concerned was that just below the house, below the bridge and the falls where Loch Etive comes over the rocks into the sea, there was a nice sheltered pool which I thought ideal for mooring a boat, and maybe then or maybe a year or two later I did buy a boat. It was locally built and called a skiff. It had a pointed bow and a pointed stern, and a single mast with a lug sail. It was very wide, but had a very little keel, only about three inches along the bottom. It also required a great deal of ballast to keep it upright, so the bottom was filled with several large stones. I moored it in this pool and all was well. I sailed it a bit then, knowing almost nothing about sailing, as I realise now, and had a few nice little sails about the place. It was good fun going into Loch Etive, which could be done when the tide was slack, though the water seethed and seemed to boil when one went through the narrows. I wanted very much to do a camping cruise in the boat, and I found somebody at St Andrews who would be willing to join me, so one summer holiday we set out, intending to sail up Loch Linnhe and land on Lismore. We got a little way up Loch Linnhe and camped for the first night. My mother had by this time got a car, and she followed us on the road. This annoyed me rather a lot, because I thought she could be nothing but a nuisance if we had to keep in touch all the time, but as it turned out it was merciful because she almost certainly saved my life. It happened this way.

We sailed up to the north end of Lismore and then there was a ferry there. We took my mother on board, she wanted to come with us to Lismore. We sailed round the north tip of Lismore and just the other side found a nice sheltered place where we could moor and camp, which we did. It had then become very wet and my friend from St Andrews decided he had had enough, and he went off home, leaving me and my mother and the boat. About the next morning it was, I think, I felt ill, and knew I was ill, and said I'd have to stay in bed in the tent, but she got worried and went off in search of a telephone and rang up Oban, got on to the hospital and told them what had happened, and they sent a launch to fetch me. It took an hour or two to get there, and I was still all right, and the launch arrived with a nurse on board to help. They put me in and took me off to Oban hospital. There I was found to have meningitis, and had already by then got quite a headache. The headache got worse and I got worse, and my mother asked whether they had had any experience of the new drugs. Fairly recently drugs called sulfonamides had been introduced by May and Baker, and there were pills called M and B followed by three numbers. Uncle Harry had seen news of this drug and he had told my mother who then remembered, so she asked the doctors if they would get some of these drugs to

View from the tent, Lismore, July 1939

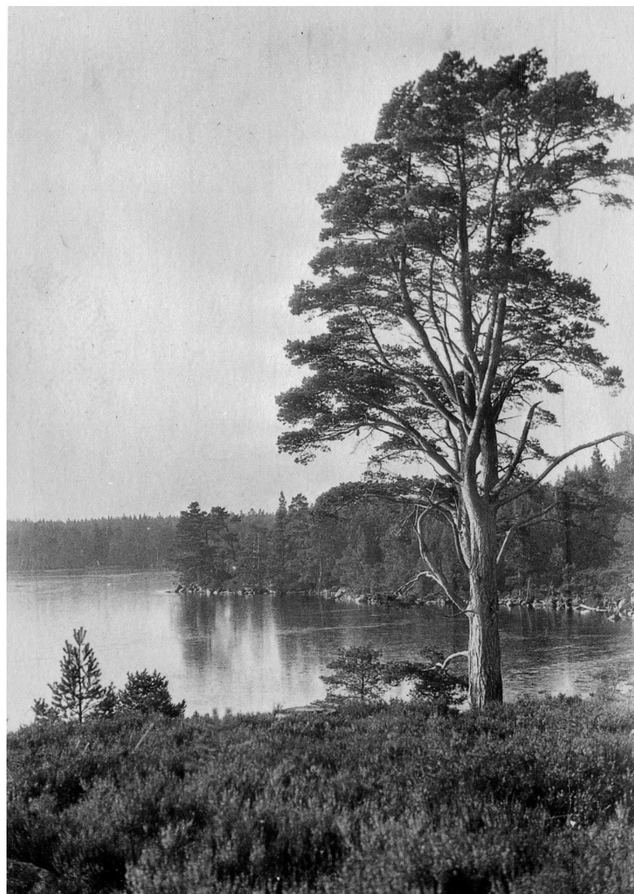
Lismore, 1939 (from a colour negative by Douglas)

try on me, so they did and it seemed like a miracle. The next day the headache had gone, and by two days I was feeling perfectly all right again, and about a week or two later I was able to return to St Andrews. I do not know how the boat was retrieved but it was somehow, and was taken to a boatyard in Oban. There it stayed for maybe a year, and then I told them to sell it. Later with more experience, I realised that it was a very unsafe boat, though it would have been difficult to capsize because its sail was relatively small. If it had capsized or been swamped it would have gone down like a stone. I only carried an inflated car tyre tube, no life-jackets or any other flotation equipment. So perhaps I was lucky to get away with no mishap. A little while later, my mother had to leave the Connel house because it was so damp that it made her rheumatism unbearable. I think she went back to Edinburgh and lived in Belgrave Crescent in a flat owned by Geraldine Sang. I think it had been bought primarily to let it to my mother, and she lived there for several years.

One other person at St Andrews I must mention. She was a German PhD student called Carla Heintz. She ran a German circle, and was very friendly. I used to go sometimes, and we sang traditional German songs, which was quite good fun. The subject of her study was rather strange, though I did not recognise this at the time. She was studying the harbours of Fife, and she went round Fife getting plans of the harbours from the local council and studying them. I think really this was perfectly innocent, because at that time I don't think there were any plans to invade this country. Hitler until the last moment thought that we would be on his side, but I was not the only unsuspicious person, because those in the local councils who lent her the plans must have been equally unsuspicious. War was declared on 3rd September 1939. I do not remember where I was then, or what I was doing, but soon after I was called up for military service and had to present myself to the medical board. I was immediately rejected and told politely I would have to find some other way to serve my country. I must say I was very relieved for two reasons, first because the need not to over-exert myself was so imbued in my conscience that I thought I might very well have a relapse of my TB and then I would be worse than useless to the army, and secondly because I was so desperately keen to get on with my life, and could not bear the thought of being interrupted again. So I started my fourth year doing Honours. After St Andrews I wanted to go to Cambridge to do a PhD, so towards the end of that year I applied for a grant to the Carnegie Foundation, and I got it, which made it possible to go to Cambridge. I wrote to Professor James Gray of the zoology department asking if I could be admitted as a PhD student, and he said yes. I am sure that both these successes were largely brought about by D'Arcy's letters of recommendation, which I think must have been greatly exaggerated.

But before going to Cambridge, after the end of the term, I got a short job with the Forestry Commission. It was I think in Angus, or maybe even Perthshire, and there was a bit of forest being felled. I was appointed as clerk, and my duty was to measure trees that had been felled, so I measured a beech tree, the length and the girth, about half-way up the trunk. Multiplying these two gave a rough figure for the volume of wood cut, and on that basis men were paid, so in the evenings I had to take my little notebook and do a

lot of arithmetic. This required multiplying the two figures for each tree together, which fortunately I could do on a slide-rule which I had brought with me, and then adding these up, which gave the total volume of wood felled. I had taken with me a book on statistics to study, because I thought that statistics must be important in biology, and had never learned any in the courses at St Andrews, so I studied this book and found it fairly simple and well explained. One of the calculations described was calculating a correlation, and I thought I could well apply the data I had got on these trees to calculate a correlation between height and girth. Now you would think that the older trees would be both higher and thicker, and the younger ones shorter and thinner, so I calculated the correlation between their height and their girth, which did not require a great deal more arithmetic, and to my surprise I found the correlation to be zero, which means that thicker trees are not taller, thinner trees not shorter, and the reason for this occurred to me only later. The trees all grow to roughly the same height in order to reach the light above their neighbours, so ones with a poor start or which are later in germinating have to compete against these taller trees already there. So they grow tall, but they don't have the reserves to grow thick as well as tall, so they put all their growth into growing tall until they all get to the same height and so there's no correlation between the two. That first application of statistics was a very good exercise. I did not fell trees myself, but did some other things like lopping the branches off fallen trees and marking the trees to be cut, and altogether I enjoyed my time with the Forestry Commission very much.



Loch Garten, 1932

Trinity College Bridge

St John's College, Bridge of Sighs

Cambridge, July 1937

8. Cambridge

So I went to Cambridge in September 1940. By that time the war had got going in earnest after a slow start, and the news was always bad. Life in Cambridge was overshadowed, of course, by the war, and I think a lot of people felt they should not be there, in Cambridge, and I began to think I had been very spineless when I was called up. I could easily have concealed my past to the medical board, and I think I would probably have survived no worse than all the other people on active service. My name was, however, put on what was called the scientific register. From this the Government was supposed to select people who could be useful in war work, and I fully expected that I would sometime sooner or later be asked to do something useful, but I never was. Maybe I should have applied to get into operational research or something like that, in which several of my later colleagues served. Gray at the Department of Zoology thought he should get his students to work on something useful, and decided to study wireworms which are the larvae of a beetle. The wireworm is an agricultural pest because it eats carrots and potatoes which were an important source of our food. One student a year ahead of me was studying the reaction of wireworms to humidity, that is to see how they would move about in the soil according to how wet it was, and I was told to study their reactions to temperature, and I later added to light, which turned out to be more interesting. When I had got fully going on this I wrote to D'Arcy Thompson to tell him what I was doing, and was horrified when a few days later a letter from him appeared in *The Times* saying that to work on such an uninteresting subject as wireworms was a terrible waste of talent, and more of the same. I went to see Gray immediately, and he was quite nice about it, but I had to write a response in a letter to *The Times* justifying what I was being asked to do. That was published, and nothing more was heard of the matter, but I found it extremely embarrassing.

The work was fun to do but not very interesting, but as I had some time to spare, I thought I would see how they reacted to light. You'd expect them to move away from light since they live in the soil, because if they got on the surface they'd be subject to predation from birds; and sure enough they did. But then I wondered, were they sensitive enough to detect moonlight, because if they couldn't move away from the light at night, that might be a disadvantage too. So one clear night I went into the laboratory when the moon was shining through one of the windows, and put them on a piece of paper to trace their movements, and sure enough they moved away from the moonlight, so that showed that they could detect light as dim as moonlight. Of course I can't see how that observation or any of the observations of their responses to temperature could be of any practical use, and though I published two papers on the work later, I do not know that anyone ever used them.[19]

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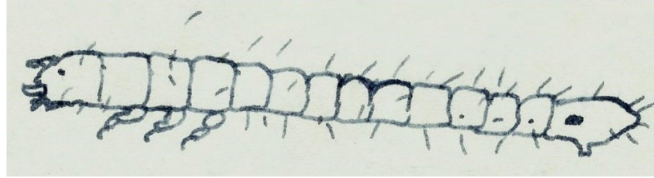
[19] 'On the behaviour of wireworms of the genus *Agriotes* Esch. in relation to temperature', *Journal of Experimental Biology* (1945) **21**, 17–32; 'On the movement of wireworms of the genus *Agriotes* Esch. on the surface of the soil and their sensitivity to light', *ibid.* **21**, 33–38.



Drawing of a wireworm, from a letter of Douglas to his fiancée Margaret (22.3.1941), in which he explained the subject of his PhD:

> ‘He lives in the soil and about twice a year he changes his skin, because you see, being an invertebrate he has no internal skeleton and so uses his skin as a skeleton to keep him in shape. But it can’t increase in size to accommodate his growth, so he grows in steps and changes his skin at each step. He lives in the soil almost anywhere and eats – well nobody knows what precisely he *does* eat, but the famers know, of course. Doesn’t he bore into potatoes and carrots and ruin green crops and grasslands? What else does he do if he doesn’t eat these things? But somebody did some experiments and found that there is never anything solid in his gut and moreover he seems to be incapable of digesting starch (which is the chief ingredient of potatoes). So the question is not as simple as the farmer supposes.’

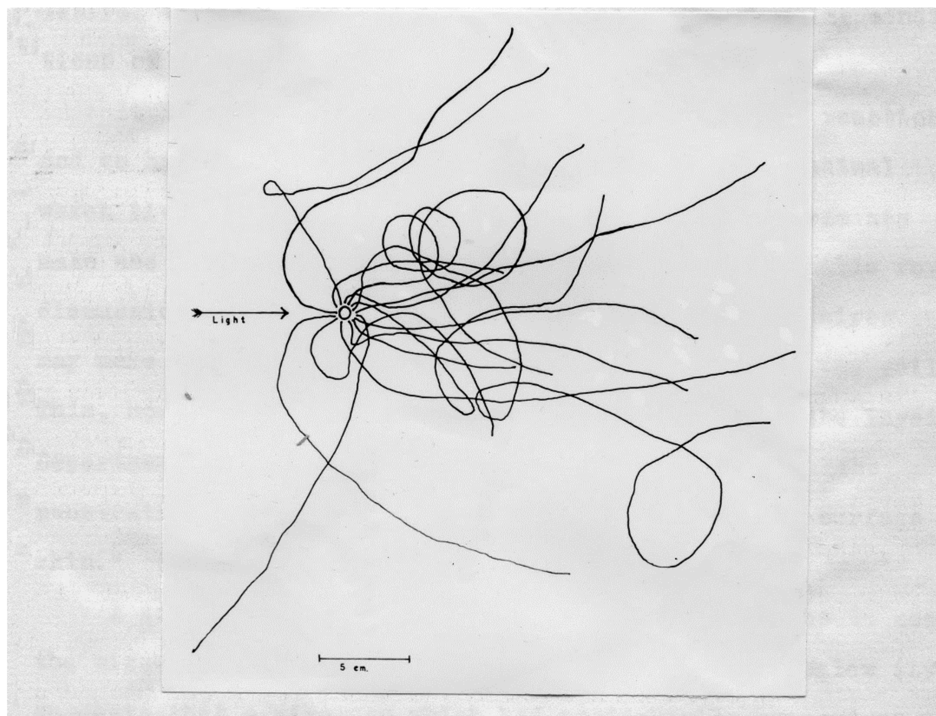


Fig. 1 A. Record of paths followed by 15 wireworms when illuminated by the moon at 20° elevation. All tracks start at the circle. The direction of the light is shown by the arrow, the source being to the left of the figure.

Diagram from Douglas’ thesis recording wireworms’ movement in moonlight

I enjoyed life in Cambridge very much in spite of the wartime restrictions. I sang in CUMS. I had never before sung in a large choir like that, and got a great thrill from singing the major works. I remember for example chiefly the *B Minor Mass* which we sang in King's College Chapel, the *Missa Solemnis* and the *Messiah*, but we sang many other things. One of the PhD students in the lab was also a member of CUMS. He was an Australian, Alistair Crombie, who later went to Oxford where he became a professor.[20] Soon after I came there he said he must take me in hand and correct my Scottish pronunciation. So to start he said, 'Now the word "food", you mustn't say "fud", you must say "fiewd".' I thought that was even worse, but I saw what he meant and I tried to reform my ways.

The only direct impact of the war on me was fire-watching. We all had to take our turns, to spend the night in the lab and go on the roof to look out for incendiary bombs. These were fairly easy to deal with if you were there on the spot. You simple picked them up with a shovel and put them in a bucket of sand, but I never actually encountered one. I was on fire-watch duty on the night of one of the worst London blitzes. From the roof I could see a red glow in the sky over London from the fires, and the flashes from the bombs. Margaret was there. In March 1941 she left St Leonards and joined the Board of Trade. Her job there was to concentrate industry by amalgamating companies making the same product so that labour could be released for munitions work. I could see the flashes from the Blitz from the roof of the building, knowing that Margaret was somewhere among those flashes, but luckily as I discovered soon afterwards she had been quite well out of the way, in Hampstead.

I submitted my thesis early in 1943. A week or so later I received a devastating letter, telling me that the thesis was not passed, but that I could submit a revised version if I so chose. The internal examiner would give me help. He was Dr Pantin, a senior member of the staff. He was very nice and very able, and he gave me good advice. Also Margaret, who was then in Cambridge, gave me very good advice too, and I think I learned a lot from both of them. At that time supervisors were not allowed to give their students any help or advice with writing their thesis, in fact I got little advice on anything from my supervisor, but of course he never saw my thesis. That rule was subsequently removed, partly I think as a result of my experience. The internal examiner made it clear that it was the external who had insisted on the thesis being rejected. He was Professor Fox from Bedford College. Some time later I had the satisfaction of seeing him challenged in public. It was at a meeting of the Genetical Society and a talk had been given by a young immunologist, Billingham, who talked about his work with cattle twins, identical twins, showing that each was able to accept skin grafts from the other twin but not from any other individual. After a few desultory questions, Fox, who was in the chair, got up and said, 'Could Dr Billingham tell us why he chose such an inconvenient animal to work on?' Poor Billingham was disconcerted and could not give any sensible answer, and then J. B. S. Haldane got up and said, 'Perhaps Professor Fox could tell us what other animals besides women and cattle have

[20] Alistair Crombie (1915–96), lectured in the History of Science at Oxford, and held visiting professorships in America and elsewhere.

identical twins,' and so Fox was discomfited because he could not, there being no other animal.

Margaret and I were married on 6th April 1942. We had under a week of honeymoon[21] because she had to be back at the Board of Trade. She came to Cambridge in June 1943, and we lived at 114 Huntingdon Road. This was an extraordinary stroke of luck, because that's the house that Margaret's mother had lived in for many years, and only left because she got remarried to Claude Stevenson, a doctor, who lived in Chesterton Road. The house had been sublet to a relative of Claude's, with all Margaret's mother's furniture in it, and they left just at this time, so we were able to take over the rent of the house and occupy it fully furnished, so we had almost no expense in setting up house.

Sometime before I submitted my thesis, I had been asked if I could accept a temporary lectureship at Queen Mary College, which was then evacuated to Cambridge, and the zoology department was housed in the Cambridge zoology department. I said I would love to. The head of biology was Dr Grove who was just as boring as his book, which I read at St Andrews, had been. My primary job was to organise and run the practical classes. I always thought that practical classes ought to be integrated with the lectures so that they dealt with the same subjects at roughly the same time, but he refused to do so, saying that he couldn't give advance notice of what the lectures would be on, so I just had to do my best. He soon asked me if I could give a series of lectures on genetics, and again I said I would love to, because I had been fascinated by genetics since I read *The Science of Life* at school, and Morgan's *Theory of the Gene* in Switzerland. I do not think my lectures were a great success. I made the same mistakes as most young lecturers do of trying to put in too much in the lectures and not making the explanations simple enough. However, I enjoyed the lectures. The genetics lectures had a curious connection with Edinburgh.[22] I had been rummaging around in the zoology department's museum, and in a drawer there I found a small set of budgerigar skins; there were greens, yellows, blues and whites, and these illustrated very beautifully and clearly the main features of Mendel's laws of inheritance. They impressed me, but I do not know if they impressed the students.

The job at Queen Mary College would come to an end as soon as the person I was replacing had returned from the war, so I should have been thinking about what I might do next, but I was not. A new invitation for a job came. At this time the Agricultural Research council (ARC) was planning to set up an institute for the study of genetics in relation to animal breeding, and it was looking for suitable people to fill the jobs planned. Professor Gray came to me one day and said, 'Would you be interested in gaining some more practical experience of genetics in order eventually to take one of these jobs? It would mean going to Professor Fisher of the Department of Genetics in Cambridge and studying for a time with him.' I, of course, jumped at the idea, and Fisher applied for and got a grant from the ARC to employ me, and I joined him in

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[21] At Long Melford, Suffolk.

[22] This must be because, as stated below, in Edinburgh 'I occupied myself studying simple Mendelian genetics.'

1945. There was a house in Storey's Way which went with the professorship, and Fisher lived there as well as worked. He was divorced, or perhaps only separated, and lived alone, visited occasionally by one of his many daughters. He was a strange man, very helpful and friendly at times, at other times quite the reverse. He was a very well-known statistician, and invented many of the statistical methods that were subsequently used. He was not so much a geneticist and he quarrelled with many other geneticists, whom I think he saw as rivals and did not like that. He had changed the house by installing mouse breeding rooms in almost all the rooms, bedrooms and public rooms included. Where he lived, I never discovered. These rooms were filled with racks on the walls holding the cages with mice. He had applied for a grant for me to work on inbreeding in his mice, but very soon he decided that his experiments were not far enough advanced to make this possible, so he asked what else I would like to do, and I suggested working on the inheritance of milk yield in mice, and he jumped at this because it was obviously of relevance to animal breeding. I did not, as you might think, invent a small milking machine for measuring the milk yield, but I used the young mice in the litter to do this for me, weighing them just before they started feeding for themselves, and the weight of the litter gave me a measure of their milk yield. I found that milk yield was partially inherited, and I wrote a paper about this,[23] at the end of which I had to apply one of Fisher's statistical methods, but in a last step I made a fundamental mistake, one which was very often made at that time. I gave the paper to Fisher for his approval and any comments, and he did not spot this mistake, which was very strange because, as I said, he had been the inventor of the method. It did not affect very much my conclusion, only that the degree of inheritance was different from what I had calculated.

Fisher was engaged in a complicated experiment involving a large number of mouse genes, and also involving inbreeding, that is brother by sister mating. The choice of suitable pairs to mate together was very restricted because of the other genes involved. Inbreeding is well known to reduce fertility, and I thought it would be interesting to see how much the fertility would be reduced in the next two or three generations, and see whether he would have sufficient animals to choose suitable pairs to mate, and I found that he would not, that he would find that many of his lines that were involved in this experiment would become extinct because there was not a suitable pair to continue them. I thought I ought to tell him of this finding and see what he thought of it, and I did so one day at tea. He listened to what I said and then, without uttering a word, he turned round and walked out of the room. The next day he came to me and said, 'I think you'd better arrange to go to Edinburgh as soon as you can.' By that time it had been decided that the ARC Institute that they were setting up was to be located in Edinburgh. Fortunately it proved easy to arrange that I should go there a little bit sooner than had originally been planned. So we went there in 1947. When I was still in Cambridge the ARC summoned me to London to meet members of the Council. Several other people were there who were soon to become my colleagues. I thought the purpose of the committee was to tell us what the ARC wanted us to do, but all they did was to ask us questions, and I wondered what this was about. After the meeting I asked one of the

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[23] 'Milk production in mice', *Journal of Agricultural Science* (1947) **37**, 224–35.

other people what the purpose of the meeting was, and he said, ‘Oh, we were being interviewed for jobs.’ I was very stupid not to have realised this at the beginning. It was the first and only time I have been interviewed for a job. We were all appointed to the scientific staff of the ARC, and so became civil servants.

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Douglas (right) playing the flute with Edwin Smith on the recorder, drawn by Edwin’s wife, Olive Cook, with whom Margaret had shared a house in Hampstead during the war.

Edwin was the photographer who took the pictures for A. J. Youngson’s The Making of Classical Edinburgh *(1966). He and Olive were close friends of the Falconers.*

9. Edinburgh

I must say something about the structure of the ARC group of people in Edinburgh. The underlying plan was that general, fundamental genetics should be studied with the fruit fly drosophila. But it was not at all certain then whether the genetics found in drosophila would be applicable in any way to farm animals. So somebody was to study mice as a sort of halfway house, and that somebody was me. Then there were people studying farm animals, cattle, sheep and pigs, and there was also work with rabbits on aspects of fertility. It is worth relating a curious incident here. We were sent a rabbit with an extraordinary neurological defect. It could not complete a hop but stood up on its front legs with its tail in the air, and after a few steps it overbalanced. We wanted to know whether this defect was genetical, and so we mated the rabbit, which was a male, to several females. When it failed to produce any offspring we asked a vet to look at it. He quickly found the reason. It had no testes because they had been bitten off by rival males.

The people other than those working with farm animals were housed in the University's Department of Animal Genetics at the King's Buildings. This was an attractive building dating from about 1928 and later given 'listed' status. It was called the Institute of Animal Genetics. Above the name the stone was inscribed *'Omne ignotum pro magnifico'* (from Tacitus). This was flippantly mistranslated as 'The ignorance in this place is marvellous'. The farm animal people were later housed in another building nearby. The head of the Department of Genetics was Professor C. H. Waddington, universally known as 'Wad', who had recently been appointed in place of Professor Crew, who had retired. There was a severe housing shortage in Edinburgh in 1947, and Wad had the idea that some of the staff might be housed together in a sort of collegiate building. He therefore persuaded the ARC to buy a large house on the outskirts of Edinburgh, Mortonhall House, of which he would be the head, rather like being head of a college, an ambition which I think he always had. Before moving permanently to Edinburgh, we all came to have a look at Mortonhall to see whether we would like to be there. The others, I think all of them, said they would like to, but we said it would not suit us. Mortonhall quickly began to have troubles. For a long time after this, colleagues who were invited to our house would complain about the awful goings-on at Mortonhall, and they longed to get out, which they eventually all did, and Mortonhall was closed down.

I came to Edinburgh again to see whether I could find a house that would suit us. There were at that time three on the market and two I rejected as impracticable; one in Observatory Road, a steep road leading up to Blackford Hill, the other in Nile Grove which had a long stair down to a basement and the back garden. The third was our Mansionhouse Road house. We liked the house and never wanted to move. It was in a filthy state when we got it. Margaret came up to Edinburgh, with our two-month old baby, to help or do the cleaning up, which was a big effort. Then we moved, with all her mother's furniture from Huntingdon Road in Cambridge.

The people in the University department were known later as the Unit of Animal Genetics. There were seven of us and we were mixed up with the University department who were still there. Some of the ARC people treated the University staff with contempt, regarding them as decadent remnants of an old era. In this, however, they were very wrong, because there were two or three outstanding people. The difficulties took some time before they were smoothed out. Early on a tremendous row broke out. There were fairly obvious malpractices, for example one member who was alleged to be putting ARC petrol into his car, and there were other things which I have fortunately forgotten about. Part of the trouble was that Wad took no notice of the accounting system in the department. There were a number of groups with separate finances; the University department, the ARC unit and later on a number of others, and the way that expenditure was allocated to the funding was chaotic. It was a senior technician who did this, and when the invoices came he simply put them on to the account that had most balance in it. After that, two or three members of the ARC came up to Edinburgh to advise us on how the accounting should be done, and I had a large part in setting up a sensible accounting system. A lot of equipment had to be purchased to set up the research, and no records were being kept of what was being bought and who it was being bought by. So I introduced what I called 'supply slips' whereby the researcher wrote down the item purchased and who it was for. This was a little tedious at first but soon became accepted. It was later taken over by the Zoology Department who thought it was good, and I think it still works there.

Waddington was a complicated person. He had two great gifts from which we benefited greatly. He was adept at getting money from all sorts of sources to support the research of his group, and he attracted wide interest from all over the world, which resulted in many visitors coming to work with us. So there were usually as many visitors as permanent staff. This made working in Edinburgh a lively and stimulating experience, and I would never have wanted to go anywhere else. I don't think I could have worked satisfactorily alone or in a small group. Wad held a dual post, he was a Professor in the University and also Director of the ARC unit. I must say that as a director he was excellent because he never did any directing, and left us all entirely free to pursue our own ideas. Perhaps he did too little direction for a few people. One of my colleagues came to me soon after we had moved to Edinburgh and asked if I knew what we were supposed to be doing here. Wad's chief failure was the woolliness of his ideas. He had lots of ideas, but none of them, as far as I could ever find, could be formulated in a logical manner, or could generate prediction which could be tested. So I found his ideas of no use to me, though he had a very wide following of people of similar mode of thought.

The field of genetics on which I worked is called quantitative genetics. This concerns characters that vary by degrees such as weight or height or the milk yield of cows. The geneticists in this country and in Europe knew nothing about this field of genetics at that time. The Americans were much further advanced and Waddington thought I ought to visit America to learn something about the subject and to meet the people engaged in it. The ARC had the gift of a fellowship from the Carnegie Trust and I applied for this and

Douglas (left) with Professor C. H. Waddington, 1973

Douglas showing a visitor a mouse in the old mouse house, 1957

(Photographs by M. Latyszewski)

was awarded it. So I went to America in 1954 and stayed there for three months. There is no doubt that this visit benefited me enormously but I think I stayed far too long. I visited eight or more places and it was very exhausting – I was longing to get home long before the end of the trip. I met several people who became good friends, and most of them came to Edinburgh some time or another. One in particular spent a long time in Edinburgh, Mike Lerner, a poultry geneticist. He spent a long time in the department and helped many of us. I later recommended him for an honorary degree and my recommendation was accepted and he got the degree. I was present at the ceremony. Mike met and talked to the Chancellor, Prince Philip, and Mike was very thrilled because the Prince had asked him a question which showed that he must have read at least as far as a particular chapter in Mike's book. I did not disillusion him that it was much more likely that Prince Philip was well briefed. I met the other graduands, one of whom was Tolkien. When I read *The Lord of the Rings* I was very struck by these curious creatures that he describes, and thought that they could well have become real if evolution had proceeded for longer and given rise to more differentiation between the races of men. So when I met him I asked him if this thought had been in his mind when he wrote the book, and he said, 'Yes, very much so'.

When I left Berkeley after visiting Mike Lerner, he and a colleague, Everett Dempster, took me to San Francisco airport to see me on to a plane for Los Angeles. While we were waiting they showed me a marvellous new machine that had just been installed in the airport, by which you could get an insurance after putting a coin in the machine. They asked me if I had an insurance and when I said 'No' they said, 'Well why don't you put your dime in.' I think it was ten cents, so I did, and then Everett said, 'Well, I do hope we haven't made you waste your money.' I looked at him a little startled, and saw that he was probably thinking he should have resisted making that remark, but he couldn't. Anyway I much appreciated the wit, but for some reason it did make me feel nervous about the flight. This nervousness was not dispelled during the flight when I saw a patch of oil streaming over the wing, apparently from one of the engines; somebody from the flight deck was summoned to look at it, and he said, 'It's not serious, it won't matter,' and half believing him I relaxed and we landed safely.

I will now give an outline of the way I worked and what I did with mice. There was a person on the staff in Cambridge who was a very meticulous worker, and he was said always to have written the paper before he did the experiment, leaving blanks to be filled in when the results of the experiment were known. This seemed to me an excellent way to work, but very limited because it only allowed results which you could already foresee. I did things quite differently, and took the approach 'Let's do it and see what happens.' For example, not much was known about what happened if you breed selectively for body size, in fact I think there was only one paper describing such an experiment. So I bred from large mice in one line and small mice in another to see how they would change. I found unexpectedly that there was much more progress with the large mice than with the small. Then I had to think what the reason was for this. There

were several, but my experiment could not distinguish between them unambiguously. Probably, as with many things, several reasons were working together.[24]

Another experiment, which was quite different, tested a hypothesis. The hypothesis was not mine, but was made by a man called Hammond in the Agriculture Department at Cambridge. He was concerned with what should be done to improve the milk yield of cattle in the tropics. The environment in the tropics is of course much worse for cattle than here, and they yield very little milk. Hammond argued that what you should do is to select the cows that give the most yield here, and when you have improved milk yield, you transfer the strain to the tropics and they will perform better there. I thought this must be wrong, and that if you want to improve milk yield in the cattle, you must put the cattle there first and then pick those that perform best in the tropics because you can't know here whether the cows are going to be resistant to tropical diseases and the heat. So I did an experiment with mice. I had to make two contrasting environments, good and bad, which I did through the food. In the good environment the mice were fed ordinary mouse food, while the bad environment consisted of the ordinary food mixed with indigestible fibre. So the analogy was that those on the bad diet were equivalent to milk yield in cattle. The experiment showed unequivocally that the mice grew better on the bad diet if they had been selected for performance on that diet, and not if they had been fed the normal diet (the good diet) and selected for that performance on that diet. The experiment got widespread approval and the principle was soon adopted for selective breeding.[25]

Selection experiments with mice take a long time. One can get four generations in a year at the best, and a selection experiment is not much use unless it gets beyond ten generations, so while waiting for these experiments to get far enough I occupied myself studying simple Mendelian genetics, that is, the mode of inheritance of single genes. New mutations keep occurring and some of them may be interesting for non-genetic reasons, for example several mutations occur that interfere with behaviour or neurological function, and I tried to interest physiologists in these mutants, with some success. I would like to mention two such mutants with which I missed an important chance. One was a neurological mutant which I called *'wobbly'*.[26] It lacked coordination of movement, for example if you put it on the table, it would wander jerkily about until it got to the edge of the table and then fall off, which no normal mouse would do. I worked out its genetics but I did not think of looking at its brain. I thought that brain structure is so complicated, I knew nothing whatever about it, and that it would be pointless to do so. But it later turned out that this mouse has a defect in its cerebellum, a large structure at the back of the brain which is concerned with movement, and if I'd only opened the skull and looked at the brain I would have seen at once what was the matter. The other mutant occurred not at Edinburgh but in Glasgow. Somebody wrote

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[24] 'Selection for large and small size in mice', *Journal of Genetics* (1953) **51**, 470–501.

[25] 'Selection of mice for growth on high and low planes of nutrition', *Gen. Research* (1960) **1**, 91–113.

[26] 'The genetics of "wobbler"', Appendix in L. W. Duchen and S. J. Strich, 'An hereditary motor neurone disease with progressive denervation of muscle in the mouse: the mutant "wobbler"', *Journal of Neurology, Neurosurgery and Psychiatry* (1968) **31**, 535–42.

and told me he had got a mutant which was completely without hair and he had called 'nude'. He had not worked out the genetics but asked if I would like to do so, which I did. But I gave the work to a PhD student, who did a good enough job on it, but neither he nor I thought of dissecting it and looking to see if there were any other defects. But later it was found that this mutant lacked a thymus gland, which is essential for the development of the immune system, and it subsequently became very widely used in immunology. This work on Mendelian genetics was fun to do and quickly produced results ready for publication.

Shortly after my return from America, I was asked if I would give a series of lectures on population genetics. This is an important, fundamental part of quantitative genetics, and is really the start of it. I knew nothing about it then, so I thought I had better give the lectures which would make me learn about it. Fortunately, there was a good book which was fairly easy to understand and the lectures were not too much of an effort to prepare. I should say that those in the ARC unit did fully as much of the teaching in the department as did members of the University staff. In spite of this the University authorities refused to recognise us as relevant to the University and its work. This annoyed me very much and I was particularly galled by one trivial matter. I tried to get a University diary, which were issued free to University staff, but was told that I could not because I was not a member of the University. This provoked me to go to the University offices to see somebody there and ask them if I could have a diary, so they repeated the story that I could not. I then said, 'Well, in that case I won't be able to give any more lectures.' The man behind the desk was a bit taken aback, but said nothing and went away and got me a diary, and I got one every year thereafter. Quite soon, however, we had to pay for the diaries, so there was no longer any incentive to deny them to us. Margaret was also told that she could not join the tea club for wives of members of the University staff.

We lectured, we supervised PhD students and we participated in the setting of exam questions. I had quite a large number of PhD students from time to time. We were not allowed to be their official supervisors; Waddington was the supervisor and we deputised for him. The first PhD student I had caused me considerable surprise. Waddington told me that a man from New Zealand wanted to come and work with mice, so I said I would be delighted to have him. He came and started work, and what he wanted to do fitted in well with my plans. It was only after he had started that I discovered he was a PhD student, not an independent worker, and that I was expected to supervise him. Anyway, he did work and wrote a good thesis, but he never published it despite my prodding continually. His thesis later became the most frequently read of those in the departmental library. Another student also came by surprise, a Ceylonese from Sri Lanka. He was originally Waddington's student, and Waddington had put him on to a problem that was really impossible. He had told him to obtain samples of cattle skin from all over the world and find out whether cattle in the tropics had more sweat glands in their skins than others. The poor man wrote all over the place but could not get enough people to help him and he never got enough skins. So after a year of struggling he came to me in despair and asked if I could give him a simple problem that

he could do in two years. So I gave him something very simple and there was abundant material from our mice; he got his PhD all right.

My lectures on population genetics were replaced fairly soon by a complete course, including practicals, on quantitative genetics as a whole for third year students, and I went on doing that course until I retired. At this time, although there was a book on population genetics, there was no book on quantitative genetics as a whole except one written by Mike Lerner, the one that Prince Philip was supposed to have read, but it wasn't very good and was not really much help for beginners. So I began to wonder if I could write a book as an introduction to quantitative genetics, and gradually the idea grew and I started to write. I had to learn a lot as I went on and it took me two years or more to finish the book. I depended heavily on help from my colleagues, in particular Alan Robertson. He had a degree in biochemistry and took a strong interest in farming because he had inherited his uncle's farm. He was by far the brightest of all the people in the ARC unit. He had coffee sessions in his room every day. They were completely informal and anybody who wanted to talk would come along. I went most days. We talked of every subject under the sun, but of course mainly genetics, and I raised my problems as they occurred and almost always got the understanding that I had lacked. I knew nothing about publishers and I sent the manuscript to a local publisher, Oliver and Boyd. They accepted it with alacrity but I do not think they got advice from anybody about it, so they took a considerable risk, and it was published in 1960. It proved to be very successful and the reason for this, I think, was its clarity. I spent a great deal of time trying to make things clear; I found the mathematics difficult to understand and I could not be satisfied unless I could explain it in terms that I could understand. It proved useful to all sorts of people, animal breeders of course, who refer to it as their bible, geneticists of all sorts, evolutionary biologists and also medical geneticists. Oliver and Boyd were taken over by Longman and they produced their own printing of the 1960 edition, and they wanted new editions, because that apparently increases sales. So I did four editions, though I had to get help with the fourth because the subject had advanced beyond my knowledge, and so the sales go on. It was translated into nine languages: Romanian, Polish, French, Portuguese, Spanish, German, Russian, Japanese and Chinese. The Chinese translation was begun by a student working with us with Alan Robertson. Before he left he asked if he could translate the book into Chinese. I knew nothing about his ability to write Chinese, but I knew that he would certainly understand the book so I agreed. It was the second edition published in 1981 that he wanted to translate. In 1989 the third edition was published and he had not finished his translation so he was sent a copy of the third edition to bring his translation up to date. The same thing happened in 1996 when the fourth edition was published. The translation was eventually published in 2000, having been taken over by two of his younger colleagues. The Spanish translation was into Mexican Spanish and I was told that it was very bad and had a lot of absurd mistranslations, for example 'tortoiseshell cats' was translated as 'butterfly cats', and 'drosophila's bristles' as 'drosophila's mushrooms'. A new translation into Spanish is now being made. The sales of the English editions vary a lot according to year and time of year. The latest figures I have

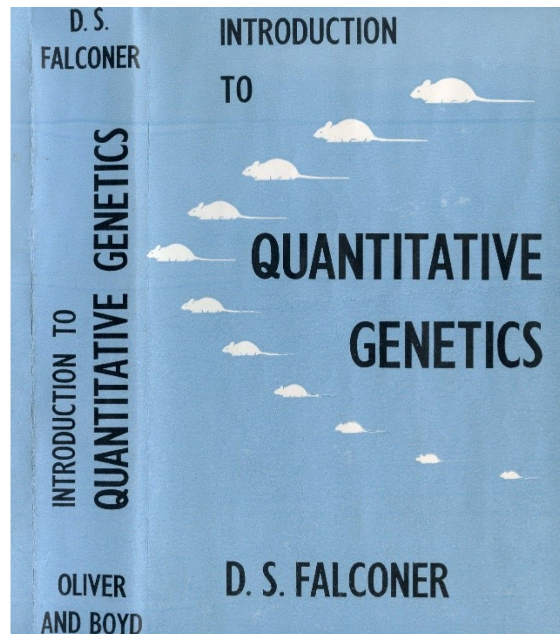
are for the first six months of 2000 when 387 copies were sold worldwide of which 48 were UK sales.

The publication of my book led me into doing some interesting research on human genetics, a subject of which I knew little. It happened this way: I got a letter from a medical researcher who was interested in genetics, and he wondered, having read my book, whether I could help him with a problem. It concerned the so-called ‘common diseases’ of which congenital malformation, diabetes and schizophrenia are examples. The inheritance of these diseases is not due to a single gene, as with Huntingdon’s disease and many others, whose genetics is simple. That the common diseases have a genetic basis is shown by the fact that they show what is called familial aggregation, meaning that if you have a relative with the disease you are more likely to develop that disease than if you have no such relative. That shows that some of the causation of the disease is genetic, and the question he wanted answered was ‘Can we assess the degree of influence genetics has on these diseases?’ The basic theory underlying the solution to this problem was already known to animal breeders but was not widely known by others, so I wrote a paper setting out the basis of the theory clearly and explained how to use it to get an answer.[27] I also provided a table which would allow a medical researcher to work out the answer without more than very trivial arithmetic, and I wrote a second paper applying the solution to published data on diabetes and some other diseases.[28] I think that these two papers had a considerable influence on my election to the Royal Society in 1973.

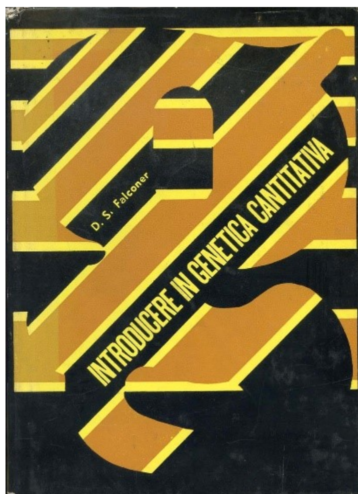
When the ARC unit came to Edinburgh I did my mouse work in the existing animal house in which there were the relics of Professor Crew’s work, mainly a diagnostic test of pregnancy for women which Crew had invented. The animal house was a large building made of wood somewhat like a greenhouse with windows on all the walls all round and in the roof, and I thought, what a wonderful place to grow tomatoes, having come from Cambridge where we grew them. So I got a lot of old animal cages, filled them with earth, planted them with tomato plants and set them on the window sills. The tomatoes did not grow, and soon got yellow and died. I think this must have been because they did not like the smell of mouse which is mainly ammonia, and that had killed them, so my ambition to have tomatoes for everybody in the mouse house was thwarted. Soon Waddington got money from the Wellcome Trust to build a new mouse house, and he appointed a top Edinburgh architect, Robert Matthew, who was his friend, to do it. I don’t think Matthew himself did anything, but he sent an inexperienced assistant. She had never built an animal house before and knew nothing about it. So I laid out what we wanted, namely the number of rooms, their sizes, and an additional room for the cage cleaners and the feeders to have their coffee in, and I stipulated that it must have large windows so that the cage cleaners could look out while they were doing their work. I thought how miserable to work in this smelly place and not be able to see

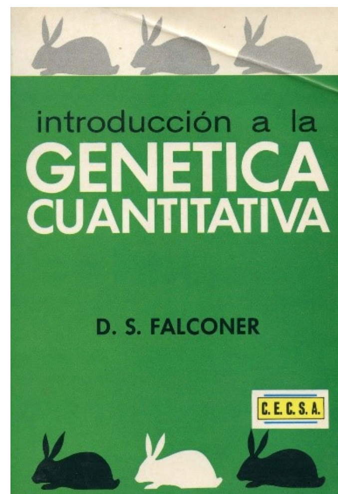
[27] ‘The inheritance of liability to certain diseases, estimated from the incidence among relatives’, *Annals of Human Genetics* (1965) **29**, 51–76.

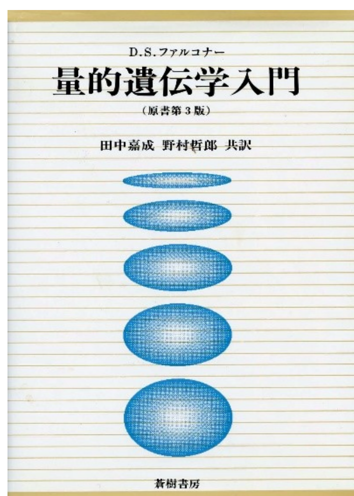
[28] ‘The inheritance of liability to diseases with variable age of onset, with particular reference to diabetes mellitus’, *Annals of Human Genetics* (1967) **31**, 1–20.

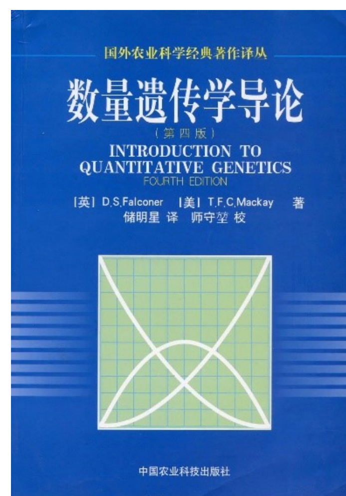


The original dust jacket for Douglas' book, which he designed himself,
and translations into Romanian, Mexican Spanish, Japanese, Chinese









Douglas in the old mouse house at Kings Buildings, 1957

The new mouse house at Kings Buildings, with the old one behind, 1958

(Photographs by M. Latyszewski)

out. But later, when animal rights activists started their work in Edinburgh, the people in the mouse house had to pull blinds or shutters to prevent people looking in at the windows. I should have got advice about animal houses but I didn't know anybody to advise me and I did not look for it. So I designed a cage cleaning machine which worked pretty well. This was a long conveyor belt on which the cages were put upside down and they first went over jets of water which washed them out and then over strong gas flames which dried them, and I hoped would sterilise them, though I never found out if it did. After this they went through the wall into a clean room where the girls put sawdust and food in them. This equipment was quoted for by a local engineer and unfortunately for him he quoted far too low and I'm afraid he lost a lot of money on it, but we could not do anything about this because the estimate had been accepted by the Wellcome Trust, so all I could do was be sorry for him. When all was finished Robert Matthew came to inspect his building. He only made one comment – the handles on the front door were too small and must be replaced by bigger ones. He was quite right, as I only realised when I saw the bigger ones in place.

In the mid-1960s Waddington lost interest in his department. His interests had shifted to more nebulous subjects, such as the effect of science on art and futurology. He said he thought he would be able to get me appointed as a Professor in the University in a Personal Chair (but not as his successor). I said I would need more time to think about it but at the moment I didn't think I would want to do it. I had several reasons for thinking this. Moving from the ARC to the University would reduce my salary considerably, but I would get two more years before retirement. I could foresee almost all my time being spent on administration, but the main reason for thinking I would not like it was that he would give me responsibilities but no authority.

Soon after telling Waddington that I could probably not accept his proposal, Margaret and I were in Boulder, Colorado, and there I got a letter from Alan Robertson begging me not to reject Waddington's proposal. I felt I could not let everybody down, so after I got back I told Waddington I had reconsidered and could now accept his proposal. So I was appointed as a Professor in 1968. This was a Personal Chair which meant that it could not be continued after my retirement. I found, as I expected, that I spent most of my time on administration and had very little time for research. I continued doing this for nine years and I must say that I enjoyed most of it. Waddington died in 1975, his successor was appointed and came to Edinburgh in 1977. I was extremely glad when he took over the headship of the department from me and I could get back to what I regarded as real work. I retired in 1980 and the ARC unit was disbanded at the same time. My retirement was very easy because I did not have to look for a new occupation, and I went on doing what I liked best. I finished a revision of my book for its third edition and wrote several papers on experiments that were already done but had not been written up. I was made welcome in the lab and given a room and facilities and I kept in touch for many years.

So altogether I have been very fortunate.

In the garden, 1988

With Margaret, 1992

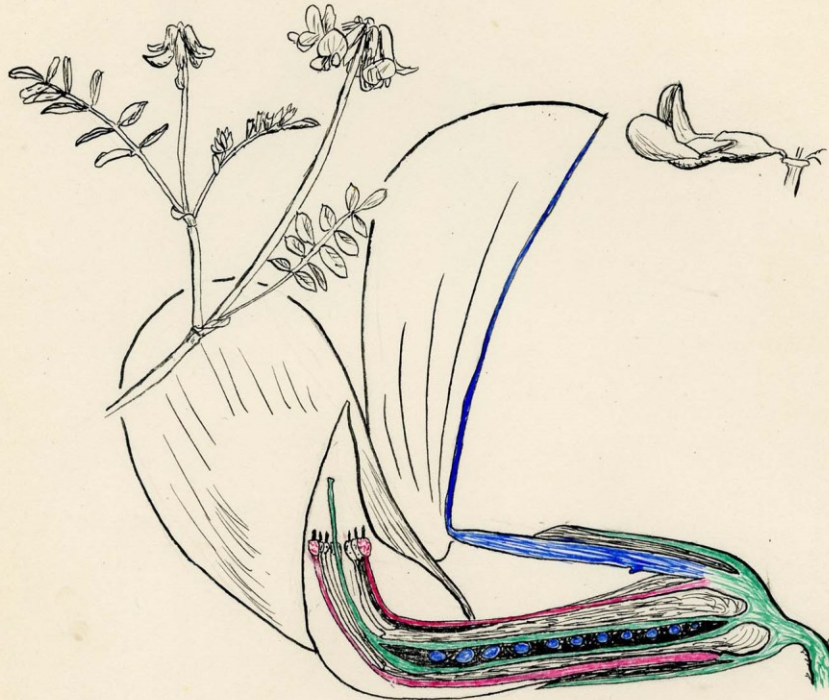
Appendix 1: Flower Drawings from Leysin

During his convalescence in the sanatorium at Leysin in the Swiss Alps, Douglas embarked on a serious study of flowers. As well as colouring in any that he found in Bentham and Hooker's *Illustrations of the British Flora*, he also made a whole series of drawings, complete with sections and detailed annotations. One or two were in colour, or had colour added, but the majority were in ink. A selection from the 101 sheets in this folder are reproduced here, mostly a little smaller than the originals.

Anemone nemorosa: *19 May 1935*

Hippocrepis comosa. Horseshoe vetch.

FAM- PAPILLONACEÆ



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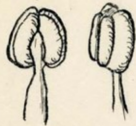


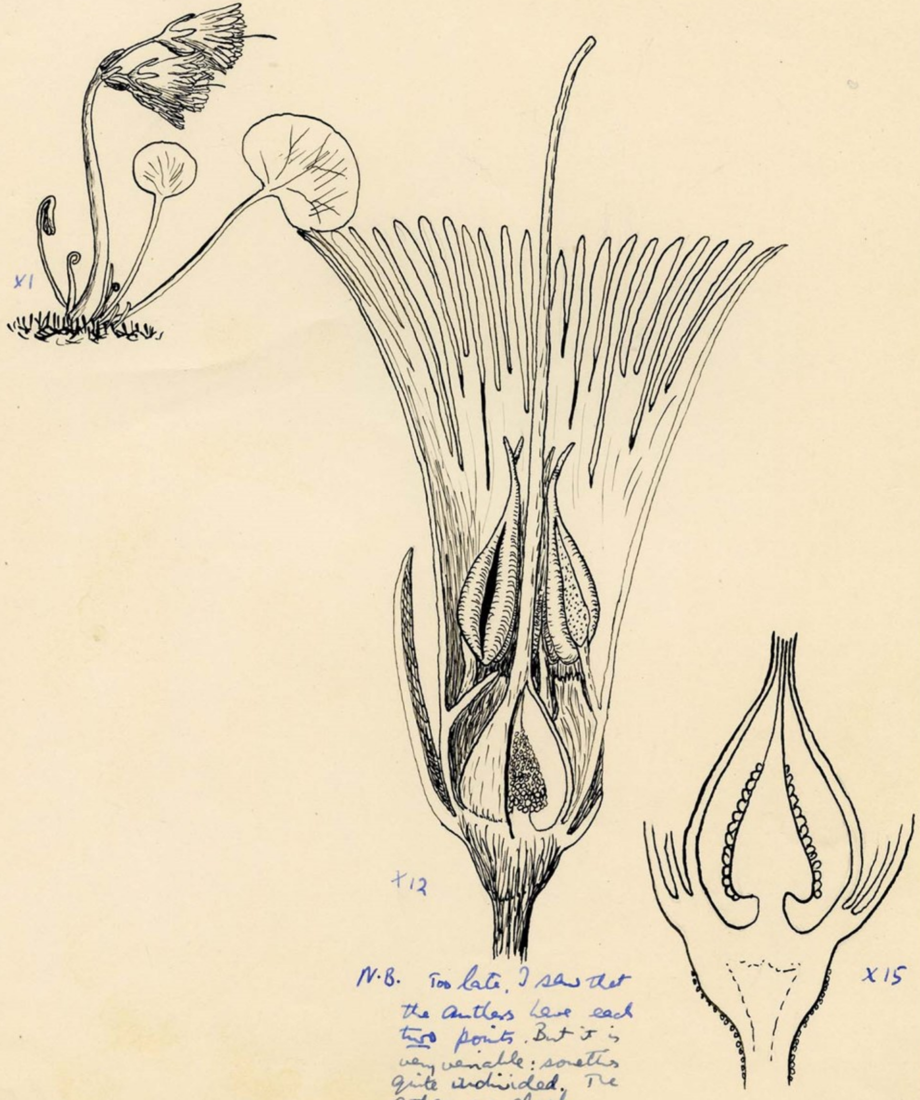
stamens in the bud before shedding pollen.

base of petals.

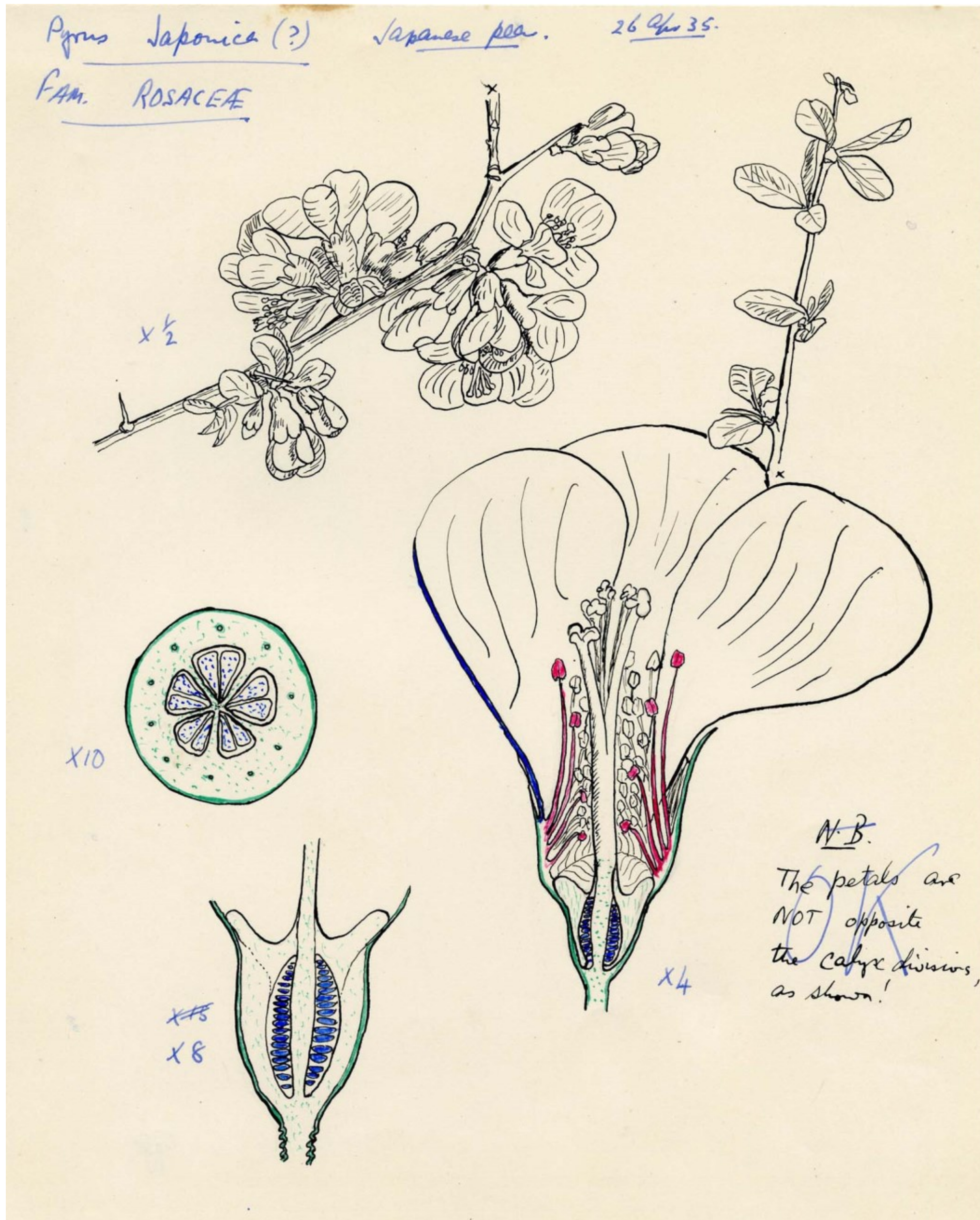
Hippocrepis comosa *(horseshoe vetch)*

Viola odorata *(sweet violet): April 1935*

Primula vulgaris



Soldanella alpina: *3 May 1935*



Pyrus japonica *(?) (Japanese pear): 26 April 1935*

Appendix 2: School Essays

These school essays, written by Douglas while he was at the Edinburgh Academy aged 13 and 14, add colour and immediacy to some of the things recollected in the memoirs.

1. [The Machrihanish village shop] (1926)

There is a curious little shop, in a village in Argyllshire, called 'The Store'. It is the village's sole shop and its wares are supposed to include everything which need or luxury demands, yet one always finds that the article required at the moment has been sold out five or ten minutes previously. The shop is small, with a counter on either side, at one of which one is supposed to be provided with food and grocery supplies. Over the other counter one buys a variety of articles, including post-cards, toys, biscuits and shaving-soap.

The ruling power over the varied assortment, crammed so neatly within those four small walls, is a cheery woman of uncertain age, and peculiar appearance. Her house is some distance from her shop and in the morning one can see her running along the shore from one to the other, hatless, coatless, always clothed in 'White samite, mystic, wonderful'. Her hair streams over her face, which is in a perpetual state of perspiration. In all weathers an umbrella is her close companion. She has a cheery 'Good morning' for all, and so has everyone for Janet – for that is her name. Her elderly sister is called Susan, and is the proud possessor of two cats and one pure white kitten, which she offered to me on one occasion.

For anyone who has the patience to listen, Janet has always a lengthy story or piece of gossip. For instance I went into the shop one day and was about to ask for a pot of marmalade, when I was interrupted by the greeting, 'Oh! You know I should have been killed this morning! I don't know why I wasn't killed, you know, but I should have been.' 'That was terrible, Janet. How on earth did you manage that?' said I.

'Oh, I was coming round the corner there, and the wind was *terrible*, you know, and ah had ma head down behind ma umberella, and ah ran into the milk cart, and the horse *reeared*. I was almost under its feet. You know, ah don't know why I wasn't killed. It was terrible! What was it you asked for again?' With that she got ready to take down my order.

'I want a pot of marmalade, Janet.'

'Oh! By the way, did you hear the thunder last night? It was terrible. I thought it would put our wireless wrong. I heard it again just now. Did you hear it?' (She goes away, and returns.) 'I'm sorry, you know, I sold my last pot to Lizzie Campbell about five minutes ago.' (This despite the fact that I have been in the shop longer than five minutes myself.)

'Oh, by the way, I was in Campbeltown yesterday buying a present for Lizzie Campbell's wedding, and the jeweller was tellin' me of how he was robbed that very morning. Is't no dreeadful, fancy as near home as a' that! A well-dressed man came into the shop and asked to see a very expensive diamond necklace. He bought it and was paying for it with notes, when another man, disguised as a detective, rushed into the

shop and clutched him by the shoulder, saying, “Up to your old tricks again, are you?” He snatched the notes, glanced at them and declared that they were forged. He took possession of the notes and the necklace, handcuffed the man and hurried him into a waiting taxi. And, do you know, that was the last the jeweller ever saw of them! Fancy that, now! And is there anything else you want today?’

‘Oh yes! But I haven’t time just now, Janet. I am going a picnic, but I will perhaps come in tomorrow. Good-bye, Janet.’

2. The Owl’s Nest (1927)

One day this spring I was walking along an avenue of magnificent old lime trees. Near the end of the avenue I noticed a tree with the main trunk broken jaggedly off. I thought this looked a very likely place for an owl’s nest, so I began to climb up it. When I was about half way up I got a great surprise; a very grey looking tawny owl flew out, so I excitedly continued to climb. I found the nest about twenty feet from the ground. It was in a shallow hollow in small pieces of rotten wood and bark; it was just inside the broken trunk and exposed to the rain. There were three dirty white eggs.

A week later one egg had a crack across it, and chirpings could be heard from inside, as if saying, ‘Let me out. It is dark in here.’ The next day that egg hatched. What was once a round white smooth egg had turned into an ugly white, fluffy creature which sprawled helplessly about among the other eggs. It had a funny round head with closed eyes; it breathed very heavily, squawking every now and again.

The next day the nest was a queer looking object. There were two funny looking white creatures, one a little smaller than the other (the third egg did not hatch), and as bedfellows there were two mice, one with its head bitten clean off. In another week there were ten mice, some without heads, some with, and a large part of a luckless rabbit. They were all neatly placed in a ring round the edge of the nest. In about another week the young owls were not recognisable. They were about three times the size that they were before; and by this time they were almost brown, but had not yet left the nest.

The owl is a bird that is much hated by smaller birds. If an owl is forced to show itself in the daytime, the small birds make an awful fuss twittering and chirping. Each time I put this bird off the nest, the other birds got more and more accustomed to her, till at last they left her alone.

3. On Climbing Ben Cruachan, Sept. 15th. (1927)[29]

[. . .] Then we had a short but very difficult climb over vast rough boulders, until we arrived on the top and found that my mother had arrived there at 4.15, one full hour before us. Here we sat down for a much needed rest and had tea. The view was stupendous. To the south we saw right over Loch Awe (how small it seemed!) and across Loch Fyne as far as eye could see. To the north and east there was just a mess of rugged Bens. But the west was by far the finest. The sun was setting and the sea looked

[29] The early part of this account is as described above on pages 31–2, though the details of how they found a boat to cross over the Pass of Brander and back are different.

like a shimmering mass of molten gold. Mull looked very near; and further away we saw all the Western Isles including Skye. Further to the south we saw right over Kintyre to Ireland.

Not content with the real top we had to go to the Taynuilt Peak. Half an hour of very tough climbing brought us there. The view was not so good here as light clouds were coming down. For one brief second we saw the sea from *above* the clouds. Then we had to simply race down pursued by thick clouds until we arrived at the road on the Pass of Brander about 8.30 pm. By now it was more than dusk. We had a very long way to go up the road to the cottage from which we had been stared at 10 hours previously. We knocked at the door at half past nine and the good wife seemed half afraid when she peeked round the door to see what bad spirits from the Pass of Brander were coming to the door at this time of the night. We told her of our difficulty and the roadman (whose cottage it was) very kindly said he would 'put us across'. So we went across the eerie Pass of Brander in a tiny boat, with unfathomable depths below us, in the pitch dark. When we were nearing the other side we had to go very slowly in order to find a landing place, and not collide with the shore. When we were returning for our bicycles we saw a car in the distance (a very unusual thing at night in that part of the country), which to our intense rage turned out to be my friend's irate father who had been scouring the country for us, thinking we were lost. We then had to bike back 5 miles over a windy rough road with no lights of any sort. Of course the moon's rising was delayed for about half an hour by a thick bank of cloud. Fortunately when we got to Taychreggan it was up, so we got across the loch again by moonlight – a perfect end to a perfect day.

* * * * * * * * *

Bookends painted by Douglas, Great Northern Divers