

CHARLES DARWIN TO CHARLES HARRISON BLACKLEY

(AN EARLY CHAPTER ON POLLEN ALLERGY)

By Albert E. Lownes

FOR a man of science, accustomed to exactness and careful attention to detail, Charles Darwin was exasperatingly lax about dating his letters and naming his correspondents. Only three of the fourteen Darwin letters in my possession show the year and seven do not name the recipient. Occasionally a postmark gives the information or the recipient docket a letter; sometimes the watermark of the paper helps or there is evidence in the letter itself — reference to work in progress, for example — but in many cases a little detective work is needed to discover these facts.¹

One such letter has been in my hands for many years. From the style of the engraved stationery and the references to Delpino and to Riley, I had assigned a tentative date of 1873 to it, but the name of the recipient eluded me, in spite of exact references to his book. When, recently, I found the book that plainly met the specifications, I was grateful to Darwin for introducing me to a man who has been strangely overlooked in most of the histories of medicine.

Darwin's letter, which seems to be unpublished, is reproduced herewith and requires little comment. It is interesting for Darwin's responsiveness to a novel idea and for the warmth with which he conveyed his enthusiasm to the author. He generously adds what information he can and suggests methods for furthering the research. Finally, there is the modest, "I do not know whether you will care to receive these few hasty remarks." It all adds up to the picture of a great, yet unassuming, man. In 1873 Darwin was at the height of his career. The almost

unknown author was, of course, encouraged by the attention of the older scientist and he incorporated some of Darwin's suggestions into the second edition of his book.

The book which interested Darwin so greatly was Charles Harrison Blackley's *Experimental Researches on the Causes and Nature of Catarrhus Aestivus (Hay-Fever or Hay-Asthma)*, London, 1873. Hay fever, as Blackley is quick to point out, is not a dangerous disease, but to those who are so unfortunate as to be afflicted, it is acutely discomfiting. Although its symptoms were recognized much earlier, it was not fully described until 1819, by Bostock, who, like Blackley, suffered from it. Bostock believed that hay fever was caused by the heat of summer. The first cases reported were confined to the upper classes and it was called an "aristocratic disease." In the years that followed, there were many attempts to guess the cause of this seasonal catarrh. Various authors attributed it to high temperature with dryness, high temperature with moisture, dust, ozone, the aroma of hay (which gives it its common name), and, finally, pollen.

Blackley, who was born in Bolton in 1820, began life as a printer and engraver. He was interested in botany, microscopy, and chemistry, but he did not turn to medicine until about 1855. He qualified in 1858 and practiced homeopathy in Manchester. In 1874 he took his M.D. at Brussels. In 1894 he retired to Southport, where he died in 1900.²

Blackley turned his attention to hay fever in 1859.

¹ See, for example, an earlier letter by Darwin, printed in *Isis*, 26, 326-40, 1937. In this case, Dr. Sarton determined the date (1861) from references in the letter, but he was unable to learn the name of the recipient.

² For the facts of Blackley's life, I am indebted to a brief appreciation by E. Bosdin Leech, in *The British Medical Journal*, Dec. 21, 1929. The Boston Medical Library permitted me to use its copy of Blackley's book. The second edition, published in 1880, was entitled *Hay Fever, its Causes, Treatment, and Effective Prevention*.

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Edw.
Blackley, Esq.

Dear Sir

I have read about 2/3 of your
book with much interest.

The genus of pollen is exciting
to think a name sometimes
seem to be an arbitrary
fact. - Was it not the want
of a name to the pollen of a
fly kept with others to
bring forth of water, & then
if it returns it in fruit
propagates? But I think in
writing and is to say that I

page 1

think that you are not
fully aware the plant
may be divided into 2
great classes, - those with
inherent pollen & those
with coherent pollen.

The former are called I
think "anemophilous"
plants, as they are fertilized
by the wind; & the latter
"entomophilous plants", as they
are fertilized by insects.
Perhaps when you get in a book,

page 2

which; the pollen of the cotton
= filum division by the
about; but a study of
my mind that to be.

When the pollen of anemophilous
plants is carried first
to the largest there in
very direction. In your
list the *Juncea*, *Gymnoc*,
Helic, *Horticocca*, *Con*
Polygona & *Plantagin*
are to the anemophilous
plants. The *Conifera* may
belong to the same class, &
I think is to find an instance

page 3

Coated ~~with~~ with the
pollen of fine hairs.

I do not know whether
you will ever receive
them for long weeks,
with my best respects
I remain

Dear Sir

Your faithfully

Ch. Darwin

Dr. Benden Sanderson, who
has been here, & to whom I
showed your book, was much
interested & will be read.

page 4

P.S. I have not read a little
more. Your investigations in
the upper regions seem to be
most ingenious & profoundly
interesting. I add one or two
trifling remarks

p. 148. I have seen an account
of beetle-fall pollen being
been west of the field of a ship
of the American coast; but I
cannot give my reference.

p. 152. I do think grains of
pollen, the being fixed then
certainly, that to take into
the flowers stigmas of
grain, could be easily blown away

page 5

by a thin wind, & with the
current of air empty

cases

p. 158. Buckled is certainly
an entomophilous plant &
as it is diomorphic regards
a view for its perfect
fruit location. The wind is
rarely or never carry away
much of its pollen.

L. S.

page 6

P.S. 2^d Pillsbury (a good name)
says in his "Fertile Canada Report"
of the northern part of the forest
The near St. James to ground
appears the deep as if
sprinkled with sulphur for the
growth of coniferous pollen,
which must come from the
fire here, 4000 miles distant,
then in flower in the S.

P. S. -

page 7

He realized that the disease was an ideal one for investigation, since it was not dangerous and it lasted for only part of the year. He tried to interest some of his patients in his researches, but none of them was willing, so Blackley became his own guinea pig.

It is not necessary here to describe Blackley's long series of experiments, but they are notable for the thorough and resourceful manner in which this provincial physician attacked his problem. He began by examining all of the earlier hypotheses. Then he devised a great number of ingenious experiments by which he systematically eliminated every suspected cause except pollen. After he had determined that pollen was the sole cause of hay fever, he tested pollens from many species of plants and found that only a few of them caused the disease. He experimented with dry as well as with fresh pollen. Perhaps his most interesting experiments were those which he used to determine the amount of pollen in the air at any given time. He invented a clockwork device which exposed a sticky plate of definite size to the air for a determined period. Later, to investigate the distribution of pollen in the upper air, he attached a similar contrivance to kites. He compared city air with that of the country. He studied the effects of wind, heat, and humidity on air-borne pollen. He fastened his sticky plates to his eyeglasses. He used filters to protect himself or he deliberately exposed himself. He tested the effect of pollen on his eyes and rubbed pollen into scratches in his skin. All of the time, he kept careful records. He found that he could correlate his attacks with the amount of pollen in the air and that he could prognosticate their severity. He even determined the threshold of his susceptibility and he put forward the idea that immunity could be built up in youth, since farmers were rarely affected, although they were most exposed.

When, after fourteen years of study, he published *Experimental Researches*, Blackley had done his job so thoroughly that little more could be added. Working quite alone, in the odd moments of a busy practice, he had been able to learn almost all that could be learned about the nature and causes of hay fever. The second edition of his book contained a few more experiments, such as those outlined by Darwin, and Blackley's suggestions for treatment, although he recognized that treatment was not effective and that the real way to escape hay fever was to live in a pollen-free climate or to filter the air.

Blackley's death was almost unnoted. The field of allergy, which he did so much to reveal, was scarcely known. The very term, in fact, did not come into use until a dozen years later. But Black-

ley had placed allergy on a firm scientific base. He was not the first to guess that pollen might be the cause of hay fever, but he did prove, beyond doubt, that it was the cause and the only cause. He turned a guess into a fact and in science, even a small fact

EXPERIMENTAL RESEARCHES

OF THE

CAUSES AND NATURE

OF

CATARRHUS ÆSTIVUS

(HAY-FEVER OR HAY-ASTHMA)

BY

CHARLES H. BLACKLEY, M.R.C.S. Eng.

LONDON:

BAILLIÈRE, TINDALL & COX,
KING WILLIAM STREET, STRAND.

PARIS: BAILLIÈRE. | MADRID: BAILLIÈRE

1873.

may become a cornerstone. Rarely has a study been conducted with more exquisite persistence or achieved more conclusive results. Blackley deserves a higher place in the annals of science.

Down,
Beckenham, Kent.

July 5th
Dear Sir

I have read about 2/3 of your book with *much* interest.

The power of pollen in exciting the skin & mucous membrane seems to me an astonishing fact. — Would it not be worth while to kill the pollen by a dry heat rather above the boiling point of water, & see if it retains its injurious properties? But my object in writing now is to say that I imagine that you are not fully aware that plants may be divided into 2 great classes, — those with incoherent pollen & those with coherent pollen.

The former are called by Delpino "anemophilous" plants, as they are fertilized by the wind; & the latter "entomophilous plants", as they are fert. by insects. Perhaps where grass is cut & dried, some pollen of the entomophilous division may be blown about; but naturally hardly any could thusly be blown. Whereas the pollen of anemophilous plants cannot fail to be largely blown in every direction. In your list the Graminae, Cyperaceae, Amentaceae, Urticaceae, some Polygonaceae & some Plantagineae are the sole anemophilous plants. The Coniferae entirely belong to the same class, & lakes in the Tyrol are sometimes coated with the pollen of fir-trees.

I do not know whether you will care to receive these few *hasty* remarks. —

With my best respects

I remain

Dear Sir

Yours faithfully

Ch. Darwin

Dr. Burdon Sanderson, who has been here, & to whom I showed your book, was much interested by what he had time to read.

P.S. I have now read a little more. Your investigations in the upper regions seem to me most ingenious & profoundly interesting. I add one or two trifling remarks

p. 148. I have seen an account of *buckets-full* of coniferous pollen having been swept off the deck of a ship off the American coast; but I cannot give my reference.

p. 152. I shd think grains of pollen, after having forced their contents, through the tubes into the plumose stigmata of grasses, could be easily blown away by a strong wind, & would then consist of mere empty cases.

p. 157. Buckwheat is certainly an entomophilous plant & as it is dimorphic depends on Bees for its perfect fertilization. The wind cd rarely or never carry away much of its pollen.

C. D.

P.S. 2d. Riley (a good observer) says in his "Fifth Annual Report of the Noxious Insects of Missouri" that near St. Louis the ground appeared one day as if sprinkled with sulphur from the quantity of coniferous pollen, which must come from the fir-trees, 400 miles distant, then in flower in the S. States. —