

sense of rectitude! Can we marvel that between two such natures, so differently ordered, and yet so complementary, there should ripen a friendship which both should reckon as the greatest gain of their lives?"

Who can fully gauge the influence of such a nature as Wöhler's? How it was exerted on Liebig is indicated in the following letter:—

"FREDERICK WÖHLER TO JUSTUS LIEBIG

"Göttingen, March 9, 1843

"To make war against Marchand, or, indeed, against anybody else, brings no contentment with it, and is of little use to science. . . . Imagine that it is the year 1900, when we are both dissolved into carbonic acid, water, and ammonia, and our ashes, it may be, are part of the bones of some dog which has despoiled our graves—who cares then whether we have lived in peace or anger; who thinks then of thy polemics, of the sacrifice of thy health and rest for science?—Nobody. But thy good ideas, the new facts which thou hast discovered, these, sifted from all that is immaterial, will be known and remembered to all time. But how comes it that I should advise the lion to eat sugar!"

It was thus in philosophic contentment, happy in his work, in his home life, and in his friendships, that Wöhler lived out his fourscore years and two. He made Göttingen famous as a school of chemistry; at the time of the one-and-twentieth year of his connection with the university it was found that upwards of 8000 students had listened to his lectures or worked in his laboratory. He was a man whom the world has delighted to honour; and there was hardly an academy of science or a learned society which has not in some way or other recognised his services to science. He was made a Foreign Member of the Royal Society in 1854, a Corresponding Member of the Berlin Academy in 1855, Foreign Associate of the Institute of France in 1864, and in 1872 he received the Copley Medal from the Royal Society. On September 23, 1882—

"He gave his honours to the world again,
His blessed part to heaven, and slept in peace."

METEORIC DUST

SIR WILLIAM THOMSON has sent us the following communication for publication:—

"Portkil, Kilcreggan, March 13, 1884

"DEAR SIR WILLIAM THOMSON,—Herewith I inclose some of the meteoric dust collected on a cotton filter, and both ignited at a red heat. The change of colour is interesting.

"On Saturday, March 1, the snow lay $5\frac{1}{2}$ inches deep at 8 a.m., pure and white. At 9.15 a.m., when I next noticed it, it was sooty looking, the blackish appearance penetrating half an inch only. The sky was clear and calm, any tendency to movement of the air being from the south-east.

"I carefully measured a superficial foot on an outlying field sloping to the south-west at a spot bisected by the 200-foot line of the Ordnance Survey, and collected the snow into two bowls of white delft, half into each. After evaporating the snow water, thoroughly drying the residue, I collected and weighed it, that from one giving $1\frac{1}{2}$ grains, and the other $2\frac{1}{2}$ grains, or 4 grains to the square foot exactly.

"I can personally vouch for the dust being all over the Roseneath peninsula, as I trudged through the snow to Coulport on Loch Long, and found it the same all the way north, also on the top of the Gallow-hill (414 feet). I have since seen those who noticed it at Garelochhead, so that on this peninsula alone, taking 4 grains as an average, there has fallen over 100 tons.

"From hearsay it appears to have been noticed from Kippen on the north to Largs on the south, and from Hamilton on the east to Dunoon on the west, or over an area (in round numbers) of 810 square miles, and admitting the former estimate, we have the astonishing aggregate of say 5760 tons! A weighty gift to Mother Earth, surely of some value.

"I should mention that every crack, scratch, or depression in the glaze of the bowls was filled with the finely divided matter; it was impossible, therefore, to collect it *all* for weighing, consequently 4 grains per square foot is under rather than over the probable average. The observer at Kippen, too, mentions that the snow was permeated there for one inch by the sooty appearance.

"On Monday (March 3), after snow had fallen to the depth of an additional 8 inches, I watched for a recurrence of the phenomenon, and on the sky clearing about midnight I fetched in a dish that I had left outside and found a little had fallen in small flakes; these had melted their way through the snow, leaving little tunnels about the size of crow-quills. The quantity, however, was exceedingly small. Tendency to movement of the air as before from the south-east. Barometer had risen from 29.4 at 2 p.m. to 29.6, steady at midnight, thermometer 42°. On Saturday previous barometer stood at 30.05 (90 feet above sea-level, aneroid), thermometer 44°, 12 noon. The dust I left with you previously contains a little organic matter (grassy fibre), though what I had under the microscope appeared entirely metallic.

"The snow had melted a good deal before I recognised the importance of obtaining a fair sample. My children, however, had rolled a huge snowball down the slope, at the top of which the cottage stands, and this had increased as it rolled until it was something like 6 feet in diameter, and so formed a mine from which to collect the dust. There is still some of the black water in process of evaporation; should you require it more of the dust is at your service.

"One of the older inhabitants remembers a similar occurrence here in 1828 on the 20th or 22nd of March, when the snow, he says, fell in black or sooty flakes.

"Perhaps it is well to mention that the goats suffered somewhat from influenza on Sunday and Monday, and that I myself had a sharp attack followed by severe headache for a day, caused probably by inhaling a minute quantity of the dust snuff fashion. It might have been from something else, only the coincidence is suggestive of caution.

"I am, yours faithfully,

"LEWIS P. MUIRHEAD

"Professor Sir William Thomson, Glasgow University"

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—The Boards for Medicine, Physics and Chemistry, and Biology and Geology, after joint deliberation, have recommended an important change in the appointments of Natural Science Examiners. It has been a regulation of the Natural Science Tripos that all answers shall be looked over by two examiners out of the eight, but it has become increasingly difficult to find examiners with the requisite extent of knowledge. Thus it practically happens that each examiner is sole examiner in a single subject, and the places of candidates are often practically dependent on the judgment of a single examiner to an extent unknown in the other Triposes. It is now recommended that two examiners shall be appointed in each subject of Natural Science, to undertake all the University Examinations in that subject, and thus the Natural Sciences Tripos, the Special Examinations for the ordinary B.A., and portions of the M.B. Examinations, will be brought into one system. The examiners should never both be changed at the same time. The payments recommended are—for each examiner in Physics and in Chemistry, 50*l.*; in Botany, Zoology, Human Anatomy, and Physiology, 40*l.*; in Geology, 20*l.*; and Mineralogy, 10*l.*

SCIENTIFIC SERIALS

Journal of the Franklin Institute, No. 697, January.—W. Dennis Marks, note on the losses per horse-power by condensation of steam in pipes and cylinders of engines.—De Volson Wood, the cheapest point of cut-off.—Prof. R. H. Thurston, the theory of turbines. This is the conclusion of a very valuable mathematical paper given in a very full abstract.—B. N. Clark, water-line defence and gun-shields for cruisers.—W. Dennis Marks, economy of compound engines.—Prof. E. J. Houston, the Delany synchronous-multiplex system of telegraphy. This invention is founded on La Cour's phonic wheel, and bids fair to supersede harmonic multiple telegraphs.

Annalen der Physik und Chemie, xxi. January.—O. Fröhlich, measurements of sun-heat. Describes amongst other matters a new pyrheliometer with a special thermopile arrangement.—A. W. Velten, the specific heat of water. The results confirm Regnault's values.—E. Pirani, on galvanic polarisation. The values are estimated by a compensation method.—W. Hittorf,