In looking over the tribes one finds many familiar genera, more than half being more or less common in this country. Thus one finds *Andropogon* (18 species), *Paspalum* (4 sp.), *Panicum* (34 sp.), *Setaria* (4 sp.), *Leersia* (1 sp.), *Sporobolus* (3 sp.), *Agrostis* (1 sp.), *Aristida* (3 sp.), *Calamagrostis* (2 sp.), *Diplachne* (1 sp.), *Eragrostis* (10 sp.), *Poa* (2 sp.), *Bromus* (1 sp.), etc. Four genera and thirteen species of bamboo (*Bambuseæ*) are recorded, but as to these the author states that his treatment is still necessarily incomplete, owing to the rare flowering of most of the species, and the unsatisfactory condition of the available herbarium specimens. The author concludes that 'on the whole, the Philippine Gramineae are strongly Malayan or Indo-Malayan, with a decided northern element in the highlands of northern Luzon, and a rather characteristic [north] Australian one.' In this connection the reader may profitably consult C. B. Robinson's paper on 'Some Affinities of the Philippine Flora' in the January number of *Torreya*.

Here may well be mentioned four pamphlets from the Philippine Bureau of Forestry, consisting of the annual report of the director, Major G. P. Ahern (including sixteen fine plates, most of which are of botanical interest); Bulletin 4 (including a paper on mechanical tests, properties and uses of thirty woods, and another on Philippine sawmills, lumber market and prices); Bulletin 5 (including a working plan for a forest tract on Negros Island, with twelve plates and a map); Bulletin 6 (including a working plan for a forest tract on Mindoro Island, with fourteen plates and a map). These bulletins contain much matter of interest to the general botanist, as well as to the forester.

EFFECTS OF SHADING ON SOIL CONDITIONS

THE Bureau of Soils of the United States Department of Agriculture has published a bulletin (No. 39) prepared by Mr. J. B. Stewart, on the effects of shading on soil conditions which is of much interest to plant physiologists. He shows that under the protection of a tent (1) the soil retains more moisture, (2) the temperature of the air is slightly warmer, (3) the relative humidity of the atmosphere is greatly increased, diminishing the transpiration of the plants and increasing their turgidity, (4) the velocity of the wind is reduced, still more reducing evaporation, (5) the plants make a larger, more rapid and earlier growth. The exact data for 1, 2 and 3 are as follows, in averages for the season:

	Inside tent	Outside tent	Difference
Soil moisture	14.7%	11.6%	3.1%
Temperature	72.8°	71.4°	1.4°
Relative humidity ..	79.0%	71.7%	7.3%

The growth of plants inside and outside of the tent is plotted on cross-section paper, showing very plainly that the plants in the tent grew faster and larger, and matured at an earlier date than the plants outside. The author points out, however, that "while the plants grew faster, and the leaves larger, the yield per acre was less by 100 to 300 pounds inside the tent than outside. This was probably due to the influence of the shade, which tends to make the surface of the leaves larger, but at the same time much thinner."

CHARLES E. BESSEY
THE UNIVERSITY OF NEBRASKA

HENRI MOISSAN[1]

MEMBRE DE L'INSTITUT

BUT what I can not put into these successive chapters, is the joy I experienced in pursuing these discoveries. To walk in a newly-turned furrow, to feel one's self untrammelled, to see new subjects for study spring up on all sides, is so delightful that it can not be fully comprehended except by those who have experienced the ardent pleasure of research.

With this closing to a preface, Moissan throws open the door and invites us to participate with him in the discoveries made with the electric furnace. This most skillful of experimenters, having won his spurs in the conflict of isolating fluorine, thus distancing all others who had attempted the task, he attacks new problems with zeal, and the ability of an accomplished craftsman. He was truly

[1] Read before the New York Section of the American Chemical Society.

the embodiment of Davy's adage, 'It is the duty of the chemist to be bold in pursuit.'

Almost his last words as he left this city in 1904 was the terse sentence, 'Chemistry is still an experimental science.'

Moissan was born in Paris, September 28, 1852. He completed his education at an early age, his professional work being guided by Berthelot and Déherain. He was chief of laboratory at the École de Pharmacie in 1879. He attained his doctorate in science in 1885, presenting a remarkable thesis on the 'Série du Cyanogene.' This secured him the appointment of professor of toxicology at the school of pharmacy. He was elected a member of the Academy of Medicine, Section of Pharmacy in 1888, and made a member of the Academy of Sciences, replacing Cahours, in 1891. He was decorated with the Legion of Honor in 1886.

His earlier researches on the 'Oxides of Iron,' 1877, on 'Chromium and its Compounds,' in 1882, and on the 'Fluoride of Arsenic,' 1884, gradually led to his notable discovery of a method of isolating fluorine, in 1886.

His indefatigable pursuit of a problem is typically exemplified in a remark in his monograph on 'Fluorine and its Compounds': "And so after three years of research, I got to the first important experiment in the isolation of fluorine."

Another instance of his indomitable persistence will be remembered by some who were fortunate enough to hear his brilliant lecture, delivered at the College of Physicians and Surgeons, in 1896, when at the invitation of the New York Academy of Sciences, the American Chemical Society, the American Institute of Electrical Engineers, and the College of Pharmacy, he demonstrated the use of his electric furnace and showed his method of making diamonds. As he removed the glowing crucible from within the furnace and plunged it into a mass of water, some of his audience, all scientists, involuntarily moved as if expecting an explosion "Have no fear," said he, "I have performed this experiment without accident over three hundred times."

In friendly appreciation of the honors done him on that visit to the United States, he sent to the National Museum a collection of sixteen specimens of the products he had obtained by the use of this new instrument of research. The bottles were neatly closed with parchment and on each he had placed his signature. This collection will now be a unique record of his genius. During the same visit Moissan lectured at the Chicago University, and attended the sesqui-centennial celebration at Princeton. He made a study of our educational institutions and on his return wrote a report in which he dilated on the advantages our country was deriving from the liberality of her citizens towards the institutions of learning, and he exerted all his influence, which constantly increased, to bring about the same state of affairs in France, where because of the university belonging to the state, endowments were rarely forthcoming.

In 1889 he published some new researches on the 'Isolation of Fluorine,' and in 1890 he wrote on the 'Fluoride of Carbon.' He received the 'Prix Lacaze' in 1887.

His work on the fluoride of carbon led to his undertaking a study of all three forms of carbon, amorphous, graphite and diamond, and it was with the object of subjecting carbon to excessively high temperatures that he devised his electric furnace, a simple yet all-powerful instrument. With it he undertook a long series of researches on the elements and some of their compounds, the story of which would not only take us through many a chapter of science but also unfold the beginnings of a new art in chemistry. Later, together with Dewar, he liquified fluorine and showed how it would combine spontaneously with hydrogen, thus establishing, at least so far, the lowest temperature at which chemical union takes place. With his electric furnace he has demonstrated not only the indestructibility of many of the elements by the highest heat yet attained, for in a brilliant discourse given at Rome in 1906, at the International Congress of Applied Chemistry, he detailed his distillation of gold, the platinum metals, chromium, iron, nickel, manganese, tungsten, molybdenum and uranium, and be-

fore he had also demonstrated in the preparation of titanium carbide and other compounds that chemical combination took place at the highest temperatures at our command. What a technique! It is as if some master of the piano began at the base notes and swept up majestically to the highest treble!

Moissan studied particularly the chemistry of the elements. His isolation of calcium is a further example of new methods of attacking his favorite problem. At the International Congress at Berlin, he gave a lecture which charmed his audience and elicited the highest admiration. He presented his results on the hydrides of the alkalies and the alkali-earth metals. He added with these a further demonstration that hydrogen is not a metal, by showing that potassium and sodium hydrides, KH and NaH, do not conduct electricity, and are therefore not alloys.

We find him passing readily from the realm of inorganic to that of organic chemistry, producing potassium formiate, HCOOK by the direct union of KH and CO_2.

One can never read many pages of his memoirs without being struck with the fact that he made no sharp line of demarcation between the inorganic and the organic; to him they were but one chemistry.

With a host of collaborators Moissan was engaged to the last on a great work, 'Chimie Minerale.' A discourse given at the convocation of scientists at the St. Louis Exhibition in 1904, delivered at the invitation of the government, was a résumé of his introduction of this important treatise.

During the last few years Moissan had forged ahead. He was the president of the International Congress of Applied Chemistry in Paris in 1900. He had previously been appointed to Friedel's professorship at the Sorbonne, and with highest inspiration he was devoting his irrepressible energies to many problems. These were indeed multitudinous. His strictly scientific work was always paralleled with important applications for the well being of the human race. His originality showed him as a leader of thought and also a worker for his fellow beings, inaugurating new industries, planning new manufactures. Few chemists have had wider influence. A medal struck in honor of the twentieth anniversary of the isolation of fluorine was only recently given him by his students and friends.

The recognition of all this was freely given to him not only at home, for France is loyal to her sons, but also abroad; the last highest honor conferred on him was the Nobel Prize, for chemistry, in 1906.

But to those who came within the subtle influence of his personality the fact that an operation for appendicitis, which resulted fatally on February 20, 1907, has severed a friendship with one whose charm of manner endeared him to students, associates and friends alike, has come as a blow so sudden and unexpected that it is difficult to fully realize it. Our sympathy goes out to his noble wife, that faithful amanuensis, who has indefatigably taken down the thoughts of the adored husband and preserved them for us, and to the young man, his only child, who is devoting himself to the same profession.

Resolved, That the New York Section of the American Chemical Society respectfully request the council of the society to fully recognize the esteem in which our honorary member, Henri Moissan, was held by the members and associates of the society, and that appropriate resolutions be sent to his widow and son.

CHARLES G. DOREMUS

JOHN KROM REES

IT is the custom to mark the passing of a well-known man with a short notice of biography; and it is not difficult to recite a list of services, enumerate honors and distinctions conferred by public bodies, or recapitulate scientific researches and publications. But to the writer these things are cold and hard when said of Rees; to him Rees was known best as a friend—that rarest friendship whose beginning is outside the grasp of memory; whose end is a green sod.

Surely, if there exists a relation adapted better than any other to make one acquainted with the good or bad in any man, it is the relation of a subordinate to his chief. Dur-