It is now just two years since Karl von Goebel passed into the beyond, and it is peculiarly fitting that this Society—The American Society of Plant Physiologists—should select him for especial remembrance at this time. While avowedly a plant morphologist, he was in very deed as much a physiologist directing his efforts at the elucidation of plant form. But more than a botanist, he was a man of extraordinary personality. We honor him today for his influence on our science and thought.

Born in 1855 in Billingheim, Baden, his early youth was overshadowed by illness and the circumstances following the death of his father in 1860. Following his destiny fixed upon by a pious mother, he was educated for the Ministry, but when he was doing his duty as a theological student at Tübingen, he took advantage of the presence of Hofmeister to pursue the study of Botany. His predilection grew out of his earlier love of nature awakened in him by his environment, especially the Schwabian Alp, which “won all his love” and first aroused in him an appreciation of nature. It is easy to imagine the influence which Hofmeister had on the young Goebel, but it led to the grave difficulty of disappointment for his mother; and it was only after three years that the die was cast. In 1876, Hofmeister becoming ill, Goebel went highly recommended to DeBary in Strassburg and a year later was promoted to the doctorate. Some months were then spent at the Zoological Station at Naples, after which followed his military obligation in Wuertzburg, whither he was drawn by the presence there of Sachs. What a sequence of scientific fathers: Hofmeister, DeBary, Sachs! Developmental morphology, anatomy, physiology under the masters! And their seed fell on good soil. Goebel may be said with much truth to have come in the fulness of time—the great

1 Annual Meeting, Pittsburgh, December, 1934.
foundation of the science had been laid and it was his privilege to build on that foundation. So well did he work that he became assured of rapid success. In 1881 he became First Assistant at Leipzig, in the same year he was called to Strassburg as Professor Extraordinarius, then to the like status at Rostock with the understanding that he should very soon be made Ordinarius. "Here," Goebel writes, "I found nothing but an herbarium; no garden, no institute. Salary 2,400 M. The appropriation available 250 M. a year. My 82-year-old predecessor remarked to me, 'My dear Goebelschen, I have always sent this amount to my daughter. I suppose it will do little harm if we continue to do so?' It cost me much effort to bring into being a modest institute and a small garden, but I learnt much from the experience.'"

In the winter of 1885–6 after getting these matters started, Fritz Oltmanns was called to be Goebel's assistant and locum tenens during his first foreign journey to India, Ceylon, and Java. Next year he was called to both Leipzig and Marburg. Choosing Marburg and liking it well, he planned to end his days there. There he undertook the editorship of Flora, which furnished a daily stint of work for the rest of his long life, for the task passed from his hands only with his death. A second journey, this time to South America, yielded much adventure and his descriptions of the Venezuelan paramos in the Schilderungen.

But his dream of living out his life in Marburg was not to be. In 1891 he went to München where botany had been for a time in a state of lassitude. And it was here that, beginning with his thirty-sixth year, he carried out his great life-work. It was here that we outside of his Fatherland knew him best. Some of us can recall the meager and poorly equipped Institute near the center of the city within a stone's throw of the Hauptbahnhof: Giesenhagen in a little room off the main laboratory crowded with students, Goebel in his own laboratory, not much larger than Giesenhagen's, and a little lean-to glasshouse. A small but richly planted garden furnished an apparently endless supply of material. Goebel's plans for an adequate glasshouse had been frustrated by a congeries of circumstances but with the happier final result that Nymphenburg was chosen by Goebel as the site for the Institute and Garden and, with the support of his friend the King, these were brought to fruition and constitute a material memorial to him and his life-work. The Garden was designed to serve not only science but the people. Every day during the growing season sees troops of school children wandering here and there, orderly and under guidance one may be sure, satisfying their rampant curiosity for which there is endless material, the Biologische Abteilung and the glasshouses being the chief attractions. For the public in general, an extensive formal garden with a lily pool gives delight. To Goebel this Garden was his realm, and to his students it was and is the source of a
wealth of material of biological significance. The extensive range of glass-
houses have collections which in their relative importance and arrangement
bear the stamp of the master's thought. He was particularly proud of the
treefern house—and a beautiful thing it is,—but scarcely less of the trop-
ical and larger central house. I have the impression that a photograph
here reproduced (plate I) taken of him standing on the rough steps of the
central rock-mass in this house among his beloved plants, was the one he
liked best; but this is only an impression. Plate II shows him seated in
his library.

The new Institute was not altogether to his liking. Always impatient
of showiness, the "Prunk" of the entrance hall frankly bored him. A
place for work—this was his object, and here from 1913 on he worked with
the same relentless striving that marked his earlier period.

But the material monument is of less importance than that of the mind.
Over 200 publications record his observations and thought. This merely
quantitative statement is, however, inadequate. Most of his publications
were fairly lengthy, a number of them lengthy, and some massive. The
Organography alone has the stature of an encyclopedia, but without its
perfunctory character. It is a mine of information illuminated by a brilli-
ent light of thought. So all-embracing are the contents that, wherever
it may end, all future morphology must take account of, if not begin with,
the Organography.

All this was the product of an almost fanatically restless mind, restless
above all in the acquisition of facts from the study of living plants. It
was hunger for materials which took him on long and trying journeys into
the tropics, into New Zealand, Australia and South America, whence he
brought back extensive collections of material. Of his thorough work in
the field I am personally aware, since he turned over to me in most generous
fashion the whole of his Utricularia collections which contained materials
in fluid of no less than about forty species. Keen as was his interest in
this genus, it was scarcely less so in many others which he must have col-
lected with equal zest. His last lengthy journey, to Java and Sumatra,
was undertaken when approaching 70 years of age and while on shipboard
he received a shower of congratulatory telegrams. Shortly after, a
Festschrift containing contributions of his students and friends did much,
I imagine, to heal the wounds of the sad period of the world war.

Though made Emeritus in 1931, he had to carry on for yet another
year at the age of 77 when his successor, Professor Fritz von Wettstein,
took over. It was characteristic of him that his penultimate lecture ended
the course; he thus avoided the demonstration which would inevitably have
occurred. Even after retirement, as had been his habit through the years
past, he made each day a tour of the glasshouses, did his editorial work
and carried on investigation, and was beginning, even at that age, a study
of the placenta, which started when he cut in two a Catalpa fruit with his
penknife and asked me what the huge placenta meant biologically.

To speak briefly of Goebel’s work is difficult and a general character-
ization must here suffice. As everyone knows, it covered an extraordinarily
wide range of observation on an array of materials which was made avail-
able only by his own explorations in most parts of the world. He thus
became aware of the exceeding variety of plant form. But he was not
content merely to observe in the restricted sense; he felt the urge to ex-
plain form in physiological terms, how it comes about and to what end. To
this purpose he was constantly experimenting, to be sure in the simplest
sort of way: “For an experiment one needs a plant, a flower-pot with
earth and a question,” the “question” implying brains!

Though he was little given to speculation, his wide and intimate knowl-
dge of plant form led him to a modification of the Darwinian selection
theory. He was convinced that the variety of plant form was much
greater than the variety of the conditions under which they grow, and saw
in these various products many structures which could not be regarded as
directly adaptive, but rather indifferent, being neither harmful nor useful.
They can arise or disappear without being subject to selection, or they
can group themselves and combine to produce members which may enable
the plant to become adapted to quite other conditions than the primary
ones, and the principle here implied was one of his chief guides in reflecting
on the form relations of the plant.

It is also to his merit that he broke away entirely from the formal
morphology of which Goethe was the chief exponent. It was this freedom
from prejudice which enabled him, e.g., to lead us to an understanding of
that most curious and puzzling group, the Lentibulariaceae, particularly
Utricularia, acute observation and close reasoning being exemplified in
rare manner in his discussion of the evidence available. It was a mark of
his reasoning that he insisted on the distinction of objectivities and names.
“First of all let it be understood that in nature there are neither ‘leaves’
nor ‘lateral members.’ Both ideas are but abstractions of our minds, not
just the expression of the facts of observation.” Unless we see this as
truth, “morphology stiffens into a dead schematism,” that is, “if we do
not regard the plant to be what it is in reality, a living body whose func-
tions are carried out in the closest possible relations to the outside world.”
Thus morphology became a physiology: “Morphology is that which we do
not yet understand physiologically.”

As indicated, his methods of work were of the simplest, and he
could be pretty caustic when, for example, one used a microtome when
a hand-section would do the work as well or better. I heard him re-
mark in the earlier days of microtome sectioning that anyone who could
cut microtome sections regarded himself as a botanist. To be sure,
there was a microtome in his laboratory: "Das ist ganz schön, aber auch dieses muss mit Sinn angewandt werden; eine blosse Hobeltechnik genügt nicht zu morphologischen Schlüssen."

He always insisted on an adequate historic treatment of a subject and he was thoroughly impatient of work done in ignorance of what had gone before. His waste basket was the richer. But he was still more impatient of inaccurate observation. One might differ from him in a matter of explanation, but if one fouled his anchor chain of observation his criticism was a flaming sword.

"Dazu sei nochmals bemerkt, dass es sich nicht um eine Theorie, sondern um Tatsachen handelt, für deren Richtigkeit ich gerne auch weiterhin die Verantwortung übernehme und von denen sich jeder überzeugen kann, der eine etwas schwierige entwicklungsgeschichtliche Untersuchung auszuführen versteht."

But let it not be thought that he was an overbearing man. On the contrary, he had a placid manner and was kindness itself in his daily relations. His personality was of a rare kind; he walked the earth with a god-like serenity, and indeed his stature, massive head and level eye started a tradition among the natives of Java with whom he came in contact, so that later travellers heard that a god had been there before them. His beard may have been a factor in establishing the tradition, but yet we confess to a sympathetic appreciation of the feeling that in Goebel we saw something übermenschlich.

While he walked and talked with kings of the earth, he remained quite unspoiled. When his King made him a knight and his students next morning hailed him with an unusual amount of academic applause, he remarked with his peculiar dry humor, that although he had been made a knight he would still come to his lectures afoot. Of course, it could not be otherwise, for his was a simple if extremely intelligent mind. Honors recorded elsewhere were poured in on him but, while appreciating them, he was not puffed up.

Generous, he gave of his time and material to whomsoever he found worthy. If he was found in error he was readily willing to admit it without abatement of his kindness. A brilliant lecturer, given to a rich dry humor, he depended none the less on the things which he discussed, and the students' desks were always loaded with fresh materials for observation while he spoke of them. His lecture room often looked like a horticultural show.

The favorable season during the summer semester permitted excursions and these usually to the nearby Tyrol, when he was the most genial companion. Even then he had an ailing heart, so that he climbed slowly; otherwise his long legs had set a hard pace for some of us. I recall on a beautiful sunny day, on the swelling bosom of one of the high hills sur-
rounding Innsbruck, finding *Botrychium lunaria*, I think it was, searching with him for an hour for the prothallia without success but with much enlightening talk in which Bruchmann was not forgotten. Such excursions, usually for two days, spending the night at a country inn, were a full experience for a young botanist of the western world. Goebel was the center of interest about which the international group of students played: it was always "der Geheimrat."

And it was while on an excursion to his beloved Schwäbische Alb, whither he ever returned, that he fell and received a severe injury from which, had his heart not failed him, he would have recovered. He died on October 9th, 1932, at the ripe age of seventy-eight years, after being only a few months out of harness but still active as President of the Bavarian Academy of Sciences. I cannot but think that his latter years were made happier for him when, during the last International Botanical Congress at Cambridge in the company of Professor L. Jost, after visiting Stephen Hale's rooms in Trinity, we visited the Chapel and there looked in silence at the memorial to the German students of Cambridge who had died fighting for their country.

His only visit to North America was on the occasion of the International Congress of Arts and Sciences, September, 1904, held under the able guidance of Professor Hugh Münsterburg, and it was then that we had contact with Goebel on our own soil. That occasion was made memorable by his presentation of his paper "The present-day problems of plant morphology," from which brief quotations have been made above. It should be realized that this was a sort of confession of faith, and for its comprehensive values it should be read by every aspiring botanist no matter in which direction his inclinations lie. It is a masterpiece of clear reasoning. At such a gathering of notable scientific men from all parts of the world, memorabilia inevitably emerged; it is appropriate to mention one to this audience in particular. It was the occasion of an informal dinner fittingly enough held in the "Tyrolean Village," even if a synthetic one, at which were seated von Schrenck, John M. Coulter, Hugo DeVries, F. O. Bower, Charles B. Davenport, W. G. Farlow, William Trelease, and our own guardian spirit, Charles R. Barnes. The modest Goebel was the dominant figure there.

May his memory as a man live in our hearts and his teachings in our minds. *Forsan et haec olim meminisse juvabit.*

**Note:**—In preparing the above memorial I have had the benefit of the notices by Professor Fritz von Wettstein, Prof. F. O. Bower and Professor G. Karsten.

**McGill University**

**Montreal, Canada**