by seed, and there hybrids of the cinchona with increased quinine content were first developed. The zoological collections in the Buitenzorg Museum are rich and varied, and uncared for in the climate of Java will before long be lost inevitably. They have come from every corner of the far-flung empire of Netherlands' India and represent much rare and priceless material upon which important publications have been based. For the botanist the garden is a wonderland. Here he finds gathered together the giant Rafflesia of Sumatra, the giant bamboos, the immense variety of superb and fascinating orchids, the wealth of insectivorous and myrmecophilous plants, the stinking but delicious Durian, the vast variety of strange and interesting palms which have fascinated the botanists of three generations.

No other institution in the Tropics has accumulated so great a fund of biological information as has Buitenzorg, or kept the priceless materials collected in better condition, most difficult undertaking in a tropical climate.

We are aware that the policy of the Dutch in keeping secret certain discoveries regarding gutta-percha has been criticized, and that there has been criticism too regarding the monopoly of cinchona which has been built up in Java. However, in defense of this policy, it may be said that the discoveries were made at great cost to the Netherlands' Indian government, and have constituted an important source of revenue from which to draw funds for the support of the scientific work carried on there.

These facts, furthermore, being of a political nature, should not prejudice us, as they do not concern the question at issue, which is how to prevent the loss to the scientific world from the collapse of a great center of European learning in the Orient. Every biologist, no matter where he lives, is interested in the conservation of this great scientific center in Java. National lines and national prejudices ought not to enter into the question.

Dr. Dammermann, the present director of the institution, has sent out a straightforward sincere appeal for assistance. The amount asked for is not excessive. No similar garden is maintained so economically as is that at Buitenzorg, owing to the trained staff of Javanese gardeners and laboratory assistants, who are paid the lowest wages ever given to men of such intelligence. When compared with the expenses of maintenance of similar collections elsewhere, the amount appears insignificantly small. Small as it is, however, the situation in Holland is such that help is needed and if not forthcoming, the crisis will soon come. The speed of deterioration of such organizations, when neglected in the Tropics, is amazing. A few months of neglect lead to irreparable losses. The Buitenzorg institution deserves to be tided over into a more prosperous era, or until new sources of income can be devised for its maintenance. It represents a storehouse of knowledge which should not be allowed to disintegrate. What can be done?

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CHEMICAL AND PHYSIOLOGICAL PROPERTIES OF KOJIC ACID

IN a recent study of the metabolism in dogs of the six-carbon derivatives of glucose, a marked toxic action was observed in the case of kojic acid. A definite response was noted after the intravenous injection of 150 mg per kg. The symptoms are copious salivation, retching, vomiting and defecation. The reducing power of the blood is greatly increased. The head begins to nod, the gait becomes unsteady, the animal becomes quieter and may even go to sleep. With larger quantities the animal becomes greatly excited. This is accompanied by continuous yelping and, at intervals, tonic and clonic convulsions. There is marked exophthalmos. Practically the same symptoms are shown by rabbits and rats. The lethal dose of the sodium salt was found to be about one gm per kg.

Kojic acid is formed under certain conditions by molds and aerobic bacteria.[1,2] Maximum yields of 65 per cent. have been obtained from molds by May, Moyer, Wells and Herrick.[3] Kojic acid, like glucose, has the amylene oxide ring structure;[4] but, unlike glucose, this ring is stable. Its acidic properties probably are due to the phenolic hydrogen. It is a pyrone and possesses the properties of other known pyrones. Its copper salt is quite insoluble. It forms a colored iron complex which the writer has observed even at a dilution of 1 to 400,000. The writer finds also that this iron complex can not be reversibly oxidized or reduced. Unlike ascorbic acid (vitamin C), it is not oxidized by iodine in acid solution; but it readily absorbs four equivalents of iodine at pH 6–7. It is further metabolized by molds and yeasts. The writer finds that small quantities injected at two-hour intervals are largely retained and probably burned by the animal.

Its mode of formation under aerobic or partially aerobic conditions, certain of its chemical properties and its marked pharmacological action suggest its possible formation in the tissues of animals in certain pathological conditions, such as epilepsy. Work is

[1] K. Saito, *Botan. Mag.* (Japan), 21: 249, 1907.
[2] T. Takahashi and T. Asai, *Proc. Imp. Acad.* (Tokio), 8: 364, 1932.
[3] O. E. May, A. J. Moyer, P. A. Wells and H. T. Herrick, *Jour. Am. Chem. Soc.*, 53: 774, 1931.
[4] T. Yabuta, *Jour. Chem. Soc.*, 125: 575, 1924.

now in progress in the writer's laboratory along these lines.

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SEASONAL EFFECT OF LIME ON STRAWBERRIES

LIME is very essential on the very acid soils of the famous Hammond, Louisiana, strawberry section to carry the plants through the summer. Experiments by A. H. Meyer and B. Szymoniak, of the Louisiana Experiment Station, with various amounts of lime indicate that a pH of 5.0 to 5.5 is best for the dormant season of the strawberry, which is during the hot months of the summer, whereas with lime the plants came through in a vigorous condition. To the contrary, in the cool part of the year, even on the check plats with a pH of about 4.0, the strawberries did well vegetatively. As the strawberries were badly injured in the spring of 1933 by a late frost, no apparent differences were revealed from the yields of the unlimed and limed plats. The dying of the strawberry plant in the summer on the unlimed plats apparently is due to less resistance to aluminum toxicity or else to a greater solubility of the aluminum during the summer.

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SPIRALING IN TREES

I HAVE read with much interest the articles and letters in SCIENCE and in *Nature* during recent years on spiraling in trees. Because all other explanations seem so inadequate I was beginning to consider it an innate and heritable character, this supposition being supported by the fact that the type of spiral found in the trunk is present also in the branches.

However, a few days ago I found a dead tree that was irregularly spiraled. About head high for 3 or 4 feet it spiraled to the right and above that for 5 or 6 feet it spiraled to the left. Still higher up it seemed to be irregular, but I could not be so sure, as more bark was still in place there. The tree was about eight inches in diameter and all in the party agreed that it was some kind of gum tree. Gum wood is notoriously difficult to split, and this may be due to such irregularity of grain.

I found also a dead sapling about 1¼ inches in diameter that spiraled to the left. It was quite decayed and on breaking it open found a separate inner core about ⅝ inches in diameter that spiraled to the right. These appeared to be the first and the second year's growth. I could not determine the kind of tree it was. This recalled to my mind that in central India the wood commonly used for furniture and for building purposes has such irregular grain that it can not be planed because whichever way one tries to plane it the plane runs into or against the grain. The native carpenters do not use an ordinary plane bit with a smooth cutting edge but one with the edge of the plane bit finely notched. I did not investigate closely how the grain is arranged, but now I wonder if possibly it may have been due to annual reversal of spiraling.

These irregularities make the inheritance hypothesis of spiraling difficult, but whatever the cause of spiraling may prove to be these irregularities must be taken into account.

Along the Sky Line Drive in Virginia are countless thousands of dead trees that have lost their bark and have been weathered sufficiently to show the grain clearly. This would seem a favorable place to study spiraling.

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QUOTATIONS

THE NEW MATHEMATICS[1]—A LECTURE BY PROFESSOR BIEBERBACH

IT had appeared hitherto that mathematics, of all the fields of intellectual endeavor, would continue to preserve its neutrality, even in the fiery furnace of the revolution. However, a noteworthy lecture delivered by Professor Bieberbach, the brilliant exponent of function theory and *Ordinarius* at the University of Berlin, before the annual meeting of the *Verein zur Förderung des mathematischen und naturwissenschaftlichen Unterrichts* on Easter Tuesday at the Berlin Technische Hochschule, seems to indicate that the doctrine of blood and race is encroaching even upon this domain and subordinating the most abstract of sciences to the totalitarian state. In this respect, historical significance for developments in the Third Reich may be ascribed to the speech of Bieberbach.

Bieberbach chose as his starting point an actual occurrence, the dispute between the Göttingen student body and Edmund Landau, the famous number theorist, and the stormy rejection of this teacher by the students. This attitude (Bieberbach asserts) is well founded and justified; for the case of Landau shows clearly that there is a German and a Jewish mathematics, two worlds separated by an unbridgeable

[1] Translation of an article appearing in the Sunday, April 8, 1934, issue of the *Deutsche Zukunft*, a German national weekly.