aged to change his politics as occasion required would be amusing if they had not been so servile. As Napoleon's power increased Laplace abandoned his republican principles (which had themselves gone through numerous changes, since they had faithfully reflected the opinions of the party in power) and begged the First Consul to give him the post of minister of the interior." This quotation appears not only in various editions of this history but also in the French translation thereof and is probably responsible for many of the misleading remarks which appear in the brief biographical sketches. Possibly the articles cited in the first paragraph of this note will receive sufficient publicity not only to remove certain moral blemishes from the biographies of one of the most eminent scientists but also to create greater caution as regards the acceptance of derogatory remarks made by popular historical writers who fail to give references in support thereof.

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PROPAGATION OF HYBRID AMARYLLIS (HIPPEASTRUM) BY CUTTAGE

SOME experimental results concerning cuttage in relation to the physiology of reproduction in the Amarylleae Genuinae and Pancratiae are worthy of brief mention, since the subject has apparently received little attention.

The Nehrling-Mead strain of Hybrid Amaryllis (Hippeastrum) was used in the initial experiments. In the breeding of this strain, *H. reginae, H. equestre, H. aulicum, H. psittacinum, H. pardinum, H. solandriflorum, H. leopoldi* and possibly also *H. reticulatum* were apparently utilized.[1] Blooming size bulbs were cut (1) lengthwise into quarters as far as the middle of the root base, and (2) into quarters. A variation was introduced in each of the two types, consisting of cutting off a little less than half of the top of the bulb before making the lengthwise cuts.

The two "callusing-sprouting" media used were sand and loam. The partially quartered bulbs and the quarters were planted in these media contained in clay pots. Moderate water was applied until growth had definitely started. Any flower buds already formed in the fractions expanded and flowered, and leaf growth appeared above the surface in some cases in less than 30 days. In three months the original ten bulbs had given rise to 15 new bulbs, an increase of 50 per cent. In another month the number of new bulbs had increased to 43, an increase of 330 per cent.

On inspection it was noticed that new bulbs had been formed at the leaf axes. The roots, however, issued from the root base fraction of the mother bulb. Roots were more abundant and longer in case of partial quartering. Complete severing apparently retards root formation. The partially quartered bulbs had entirely or practically broken into quarters by the pressure of the developing new bulbs. Where still slight connections were present, these were broken at transplanting time. The sand "callusing-sprouting" medium gave disease-free plants, as contrasted with some red rust on plants propagated in loam.

The work is being extended to include a study of the maximum number of new bulbs obtainable from one bulb, the time required for new bulbs to reach blooming size, the best season to carry out the operation and also the application of this principle to the propagation of other types of Amarylleae such as *Crinum, Hymenocallis, Vallota, Lycoris,* etc. A more detailed report will appear in the 1934 Year-book of the American Amaryllis Society.

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SUGGESTED NOMENCLATURE FOR HEAVY HYDROGEN AND ITS COMPOUNDS

THERE seems to be some difficulty in securing a suitable term by which to designate heavy hydrogen and its compounds. The selection of "deuterium" seems only to complicate the matter, for it rather suggests a new element instead of an isotope. It seems to me that the situation could be met by *speaking* of heavy hydrogen as bar-hydrogen; writing the word, however, $\overline{\text{H}}$ydrogen. Compounds made of this substance could be *called* bar-benzol and written $\overline{\text{B}}$enzol bar-ammonia, written $\overline{\text{A}}$mmonia, and so on. In formulae for compounds the H atoms of heavy hydrogen could be designated by the dash.

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HEALTH PROBLEMS IN THE AMAZON VALLEY

THE letter from Earl Hanson[1] interested me, since I am at present working in health problems in the Amazon Valley. In the Hospital of Cia. Ford Industrial do Brasil, located at Boa Vista, Rio Tapajoz, we are only 140 miles south of the equator and in the heart of Amazonian jungle. Here we have seen many thousand natives of the region. These are not

[1] H. Nehrling, "Die Amaryllis oder Rittersterne (Hippeastrum)." Paul Parey, Berlin, 1909.

[1] SCIENCE, 78: 2011; 36–38, July 14, 1933.

confined to a small area because, since our hospital is the only one within several hundred miles, we receive patients from as far east as the Xingu River, as far south as Matto Grosso and as far northwest as Manaos. The following observations are my own and are the result of working for the past 14 months with these natives.

The average native of the Amazon Valley is afflicted with what I have called the Amazonian Pentad. That is, he has five major disabilities, which in varying degree cause him to have, as Mr. Hansen has said "universal lethargy." These are in differing degrees of importance: (1) Chronic malaria; (2) verminosis; (3) secondary anemia; (4) malnutrition; (5) splenomegaly.

(1) *Chronic malaria:* From various surveys of riverside villages, inspection of laborers for company employment and routine blood examinations in the hospital we are able to state that from 50 to 75 per cent. of the natives of this region have chronic malaria. This is about the ratio of 6 to 7 *P. vivax* infections to one of *P. falciparum*. *P. malariae* is very rare. This is the average in unprotected communities—that is, villages in which no public health work is done. In the company village the rate is less than half the above. Since it is generally agreed that if it is possible to find from 30 per cent. to 35 per cent. positive smears in any given survey, one can predict 100 per cent. infection, we feel that it is safe to state that the great majority of natives have chronic malaria.

(2) *Verminosis:* In 6,384 stool examinations in the hospital laboratory the past three and one half years but 655 negatives have been recorded. These are usually single examinations, and it is safe to say that repeated searches would reduce the number of negatives very considerably. Of the positive stools many are multiple infestations. Ankylostoma is the most frequent invader, with trichuris next and ascaris third.

HEMOGLOBIN (Tallquist)

	Number of examinations	Per cent.
Below 20 per cent.	10	0.136
Between 20 per cent. and 30 per cent.	42	0.573
" 30 " " " 40 " "	71	0.96
" 40 " " " 50 " "	519	7.07
" 50 " " " 60 " "	5,620	76.59
" 60 " " " 70 " "	874	11.93
" 70 " " " 80 " "	112	1.52
" 80 " " " 90 " "	41	0.55
" 90 " " " 100 " "	18	0.21
Over 100 " "	17	0.20
	7,324	

(3) *Secondary anemia:* The figures in the preceding table are taken from our laboratory records and show the extent of the anemia registered here. From these figures it will be seen that more than 90 per cent. of the examinations show a more or less well-marked diminution in hemoglobin.

RED BLOOD CELLS

	Number of examinations	Per cent.
Below 1,000,000	11	0.176
Between 1,000,000 and 1,500,000	35	0.56
" 1,500,000 " 2,000,000	59	0.94
" 2,000,000 " 2,500,000	71	1.13
" 2,500,000 " 3,000,000	133	2.12
" 3,000,000 " 3,500,000	2,172	34.75
" 3,500,000 " 4,000,000	2,981	47.51
" 4,000,000 " 4,500,000	555	8.88
" 4,500,000 " 5,000,000	199	3.18
Over 5,000,000	34	0.55
	6,250	

These figures show almost 90 per cent. more or less marked anemia.

(4) *Malnutrition:* The average diet of the native consists of fish, salt or dried meat and *farinha,* together with a certain amount of fruit. Vegetables do not play a large part in the plan of eating. It is my impression that while the diet lacks much of being ideally balanced, the chief difficulty is not this so much as a less than normal quantity. The natives are for the most part miserably poor and unable to purchase enough for adequate maintenance. In Boa Vista company employees eat much the above diet, except that they are urged to eat as many fruits and vegetables as possible. It is somewhat of a task to persuade them to add these articles to their diet, but in spite of this such company employees and their families are much better nourished.

(5) *Splenomegaly:* It is not possible to say at this time whether Amazonian or tropical splenomegaly is an independent disease, or related to chronic malaria and verminosis. My impression is that it is chiefly due to repeated attacks of malaria. A large percentage of the natives have chronically enlarged spleens. In 60 autopsies done in the past 14 months, but one showed a normal spleen. This man was an adult male who claimed that he had never had malaria. The average weight of a native spleen at

autopsy is 500 gms, with many running as high as 700 to 750 gms.

The point I wish to make, then, is that the lethargy, the shiftless attitude and general lack of well-being of the people of the Amazon Valley can not be blamed on any one condition. Where adequate mosquito control and adequate quinine are available, where vermifuges are freely and frequently given, and where the native has money with which to purchase adequate food, his physical status becomes remarkably better. Dr. Colin Beaton and myself have papers in preparation which will enlarge on the points made here.

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SCIENTIFIC BOOKS

THE LIFE AND WORK OF PROFESSOR WILLIAM HENRY PERKIN[1]

THE gods are not always kind to parents, but British parents are on their preferred list. The Darwins, the Huxleys, the Haldanes are familiar to all of us. And now to this list must be added the Perkins. Perkin, the founder of the coal-tar industry, was the proud father of three well-known chemists; and one, in particular, the subject of this memoir, became the leading organic chemist of his day in England. The boy started badly. He "flunked" the London matriculation examination, largely because of his dislike for Latin and Greek. But when he did enter the Royal College of Chemistry in 1877 (at the age of 17) he showed sufficient manipulative skill in the laboratory to attract the attention of the professor, Edward Frankland. In those days in England (and in America), however, to be a chemist without the background of a German university training was to be no chemist at all; and despite some religious scruples (for the elder Perkin was a God-fearing man and looked with some disfavor upon the semi-atheistic views promulgated by some of the German *professoren*), the young Perkin was sent to Würzburg to study organic chemistry under Wislecenus, a great investigator and a greater teacher. In 1882 Perkin received his Ph.D. for an investigation dealing with the action of alkali on oenanthaldehyde.

That same year he transferred to Munich, to study further under the king of organic chemists, Baeyer. At this time Otto Fischer, Königs, Friedlander and Curtius were in Munich for the same purpose. It was here that he did his work on ethyl benzoylacetate, the analogue of ethyl acetoacetate—a work which earned him the title of *Privatdozent*. It was here also that he started work on three-, four-, five-, six- and seven-membered carbon rings—at the time a task of no mean proportions, seeing that even men like Victor Meyer, Emil Fischer and Baeyer himself were of the opinion that only six- and at best five-membered rings were possible. Perkin's success led Baeyer to develop his "Spannungs Theorie," which associates the extent of stability of a cyclic structure with the strain set up in the molecule by the alteration of the value of the tetrahedral angle necessary to form a ring.

After six years in Germany, Perkin returned to England and in 1887 was appointed professor of chemistry at the Heriot-Watt College, Edinburgh, with Kipping for his demonstrator. Here he entered the field of alkaloid chemistry by investigating the constitution of berberine. In 1892 he was appointed professor of organic chemistry at Owen's College, now the Manchester University; and here he remained active for the next twenty years. It was during these years that he contributed to the chemistry of camphor, only to be forestalled, to some extent, by Komppa. He was also busy with a study of terpenes, those derivatives of *cyclo*-hexane containing unsaturated linkages. Many synthetic terpenes were prepared by him from various keto-acids with the aid of the Grignard reagent. The dye-wood products, brazilin, $C_{16}H_{14}O_5$, and hematoxylin, $C_{16}H_{14}O_6$ (the latter a hydroxy-derivative of the former), carbon ring compounds and various alkaloids formed further objects of study. Together with Kipping, Perkin published his well-known organic text-book in 1894, and a somewhat corresponding inorganic text in 1909.

In 1912 Perkin was appointed to a chair of chemistry at Oxford. Such was the state of the sciences at that great institute of learning that for a time Perkin remained the one and only professor of chemistry at Oxford! Later, Soddy and others joined him. At Oxford he supervised the building of a new chemical laboratory, known as the Dyson Perrin's laboratory, which is considered to be one of the best equipped of its kind in all England. Its present director, Professor R. Robinson, the great authority on plant pigments, has made this laboratory known to all students of organic chemistry.

Perkin died in 1929.

A list of Perkin's collaborators, assistants and students is a list of English chemists of the very first rank. Among them we have A. G. Perkin, Kipping, Haworth, Bone, J. F. Thorpe, Weizmann, R. Robinson, Pope and Sedgwick.

BENJAMIN HARROW

[1] Published by the Chemical Society, Burlington House, London, 1932.