assailed by eminent authorities as "atheistic," since "it drove God out of His universe and put a law in His place."

The conflict between geology and Genesis as to the days of creation and the age of the earth lasted until the middle of the last century, and students of Dana's geology will recall the reconciliation between the two which that great man devoutly undertook. But, by the ultra-orthodox, he and other Christian geologists were denounced as infidels and as impugners of the sacred record. It took three hundred years to end this conflict, if it may be said to be wholly ended now, but certainly no intelligent person now believes that the earth was made just 5,926 years ago and in six literal days.

And now comes Mr. Bryan in this twentieth century of enlightenment preaching a new *auto de fe,* attempting to establish an inquisition for the trial of science at the bar of theology! He proposes to prohibit the teaching of evolution by fine and imprisonment, to repeal a law of nature by a law of Kentucky. He proposes to gather into the fold of his narrow theology all existing public and private schools, colleges and universities and to allow evolutionists and agnostics to found their own schools. In view of the fact that, with the exception of a few sectarian institutions, all our colleges and universities are dedicated to "the increase and diffusion of knowledge among men," that for a generation at least they have turned away from the teaching of dogmatic theology to the cultivation of science, literature and art, that they have during this period received great benefactions for the expressed or implied purpose of carrying on this work in the spirit of freedom to seek, to find and to teach the truth as God gives men to see the truth—in view of these considerations it may well be asked whether it would not be more fitting for Mr. Bryan to establish his own institution for teaching his own views of science and theology, as Dowie, for example, did at Zion City, rather than to attempt to convert existing institutions to that purpose.

Scientific investigators and productive scholars in almost every field have long since accepted evolution in the broadest sense as an established fact. Science now deals with the evolution of the elements, of the stars and solar system, of the earth, of life upon the earth, of various types and species of plants and animals, of the body, mind and society of man, of science, art, government, education and religion. In the light of this great generalization all sciences, and especially those which have to do with living things, have made more progress in the last half century than in all the previous centuries of human history. Even progressive theology has come to regard evolution as an ally rather than as an enemy.

In the face of all these facts, Mr. Bryan and his kind hurl their medieval theology. It would be amusing if it were not so pathetic and disheartening to see these modern defenders of the faith beating their gongs and firing their giant crackers against the ramparts of science.

EDWIN GRANT CONKLIN

NOTES ON WOODS

WEST INDIAN BOXWOOD

THERE has been much confusion regarding the identity of the so-called West Indian boxwoods. One of the first on the market was the "amarillo" of Venezuela, *Aspidosperma Vargasii* DC. (Apocynaceæ), but this has been very largely superseded by the "zapatero," *Casearia præcox* Griseb. (Samydaceæ or Flacourtiaceæ). A third, the "baitoa" of San Domingo, appears on the market in considerable quantity, though it is inferior in quality to the other two. It has just been determined that this wood is produced by ***Phyllostylon brasiliensis*** Capanema (= *P. rhamnoides* Taubert = *Samaroceltis rhamnoides* Poisson) of the family Ulmaceæ. It occurs not only in Hispaniola and eastern Cuba but also in Brazil and Argentina. The important distinguishing features of this wood are as follows: (1) About half of the vessels are filled with calcium carbonate. (2) The wood fibers are supplied with a thick gelatinous layer. (3) The vessel segments, wood parenchyma strands and some of the rays are in horizontal seriation. The "ripple marks" are not always distinct in the wood but are readily visible on the surface of

the inner bark. (See Bul. Tor. Bot. Club, 48: 297-306).

The statement, which appears so persistently in books, that West Indian boxwood is supplied by *Tabebuia* (*Tecoma*) *pentaphylla* B. & H. f. (Bignoniaceæ), is incorrect. Authentic specimens of the wood of this species have been examined by the writer and they have none of the characters of a boxwood. This error arose in 1884 and was due to an improper identification of a specimen of "zapatero" in the Royal Botanic Gardens, Kew. The correct identity of this wood was established twenty years later but the error persists. (See Kew Bul. Misc. Inf., 1904, pp. 11-12, and 1914, pp. 214-219).

BRAZILIAN TULIP-WOOD

THIS beautiful wood has been used for a great many years for inlay and cabinet work. In typical specimens the background of yellow is striped with rose-red; in others the red predominates. In a paper on "Storied or tier-like structure of certain dicotyledonous woods" (Bull. Tor. Bot. Club, 46:260) the writer made this statement:

"The only representative of the Lythraceæ included in the list is *Physocalymma scaberrimum* Pohl, variously known as Brazilian tulip-wood, rose wood, 'páo de rosa,' 'cego machada,' 'grão de porco' and 'sebastião de arruda.' Writers all seem to be in agreement in referring this wood to the species mentioned, but the specimens examined by the writer, which are evidently the same as those described by Wiesner (Rohstoffe d. Pflanzenreiches, 2:975), appear to belong to the Leguminosæ. They certainly do not resemble other available material of the Lythraceæ."

Very recently, through the courtesy of the New York Botanical Garden, the writer had opportunity to study the wood of *Physocalymma* and was enabled to determine positively that the Brazilian tulip-wood of commerce is not of that genus. Unquestionably it is a legume but exact identification is not at the moment possible.

COFFEE-WOOD

THE wood principally used in the manufacture of umbrella handles comes mostly from Venezuela where the name "granadillo" seems to be applied to it. In the New York trade it is known as "coffee-wood" or "brown ebony"; also as "mesquite." In European markets it is called "partridge-wood." All of these names, with the exception perhaps of "coffee-wood," are also applied to entirely different woods.

The identity of this wood has not been positively determined, but from the evidence at hand it appears to be *Cæsalpinia Ebano* Karst. This wood is known as "ebano" in Venezuela as is also that of *C. punctata* Willd. The writer has not had opportunity to examine the latter but the structure and properties of *C. Ebano* agree very closely with that of the wood on the market.

It is said that part of the trade is supplied by a wood from Mexico but no samples known to be of this source are available for comparison.

ROSEWOOD

THERE are many woods on the market under the name of "rosewood." Some derive the name from the scent of the wood, others from the color, and still others for no apparent reason at all.

The Surinam rosewood or "rozenhout" owes its name to its fragrance and is the source of an essential oil of commerce. The identity of this wood has only recently been established by Gonggrijp (De Indische Mercuur, Apr. 23 and 20, 1920) as *Aniba* sp. (near *panurensis* Mez.).

The true Brazilian rosewood has been variously ascribed to the genera *Jacaranda, Dalbergia,* and *Machærium.* The first is an error arising from a confusion of the local name, "jacarandá," with the generic. A specimen of the true rosewood collected by Mr. H. M. Curran with botanical specimens has been identified as *Dalbergia nigra* Fr. All. Certain varieties are recognized in the trade, based largely on variations in color, but the structure indicates a single species. There are other woods called "jacarandá" in Brazil which are likely species of *Machærium* but they lack the scent of the true rosewood and are distinct in structure from it.

The botanical status of the Honduras "rosewood," which is considered the best wood in the world for xylophone bars, has not been determined. It is unquestionably one of the Leguminosæ and may prove to be a species of *Dalbergia*.

COCOBOLO

THIS wood, which is used so extensively in the manufacture of knife handles, comes from Panama, Costa Rica, Nicaragua and Mexico. The tree in Panama has been positively determined as *Dalbergia retusa* Hemsley, and the wood is exported as "rosewood"; the Nicaraguan species is *Dalbergia hypoleuca* Pittier in ed. and is locally known as "nnambar"; that of Mexico, called "granadillo," is very likely a new species.

Workmen in factories where cocobolo is used are likely to suffer from an acute dermatitis resembling ivy-poisoning. Many are apparently immune while others are highly susceptible. A person once infected becomes more rather than less susceptible to the poison. The only known means of infection is through the fine dust arising in working the wood. Some investigators believe the irritation is due to an oil, others to an alkaloid. (See Raw Material, 4: 11: 402-406, November, 1921, for fuller account). According to Boorsma (L'Institut Botanique de Buitenzorg, 14: 19, 1902) small amounts of alkaloid occur in the following species: *Dalbergia litoralis* Hassk, *D. Junghuhnii* Benth., and *D. Championii*.

The East Indian satinwood, *Chloroxylon Swietenia* DC., causes a dermatitis very similar to that from cocobolo. (See Cash, Brit. Med. Jour., Oct. 7, 1911). An alkaloid, chloroxylin, has been found which is considered to be the source of the infection. (Manson Ault, J. Chem. Soc. 1909, 95:964).

"REDWOOD" AND SATINÉ

THE "redwood" or "quira" of Panama has been determined to be *Platymiscium dubium* Pittier. A wood of similar structure from Nicaragua is on the New York market under the name of "Yama cocobolo" or "Yama rosewood." It is also called "leather-wood."

The "redwood" of Brazil is from the tree named *Brosimum parœnse* by Huber. It is known locally as "muirapiranga" and "conduru de sangue" and is similar to the Peruvian "palo de sangre." It is not now on our market but dealers are in receipt of samples which indicate that it may be expected. The name of "Brazilian cardinal wood" has been suggested for it. It has good cabinet qualities and retains its bright red or cardinal color. It is much like, and may prove to be identical with, the "satiné" or "bois de féroles" of French Guiana. Owing to the confusion of the names "bois de féroles" with the generic name *Ferolia*, the satiné has been incorrectly ascribed to *Ferolia* (*Parinarium guaianensis* Aubl. (Rosaceœ). (See Stone's "Les bois utilés de la Guyane Francaise." Ann. d. Musee Col. de Marseille, 1917).

Wood specimens of satiné rulianné have been received from the Forest Service of Surinam and agree perfectly with the material described by Stone (*loc. cit.*) under that name. Leaves and twigs from the same tree as the wood specimens have been examined by Dr. Standley of the Smithsonian Institution and he says that the material agrees best with *Brosimum paraense* Huber, though in the absence of fruit (which the Conservator of Forests has undertaken to procure) such identification is only provisional. If this identification proves to be correct it will likely follow that Aublett's *Ferolia guianensis* is a synonym, since his description seems to fit this tree.

The satiné rubanné growing in the tropical rain forest of Surinam attains a diameter of two feet and has a white latex in the bark. The Arowak Indians call it "oolemeriballi," "warimiaballi," and "sokonéballi," while the negro letterwood-hunters have named it "ajeersi," meaning "it looks like it," that is, it looks like the letterwood or snakewood (*Piratinera guianensis* Aubl.).

KAKATARA-BALLI

THIS is a dull-white wood of British Guiana described by Stone and Freeman as No. 46 in their list of Timbers of British Guiana. A microscopic examination reveals that the ground mass is composed of spiral fiber-tracheids, the vessels have scalariform perfora-

tions with many bars, and the rays are large and composite or heterogeneous. The natural conclusion is that this wood must be from some species of *Ilex*.

This finding has since been confirmed by the Forestry Officer of British Guiana.

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SPECIAL ARTICLES

GENETICS OF THE VIENNA WHITE RABBIT

IN the second edition of his text-book[1], Dr. Erwin Baur described a cross between two white varieties of rabbit which produced colored young. One of the white varieties is the familiar pink-eyed albino, the other is called Vienna White and is described by Baur as differing from the albino variety only in the color of the eyes, which are blue. He explains the production of colored young in this cross as due to the complementary action of two independent color factors, like the well known cases among plants in which a cross between two white-flowered varieties produces progeny bearing colored flowers.

It happens that the colored young rabbit figured by Baur as resulting from the cross was Dutch marked, and this led Punnett to suppose that the blue-eyed white parent was really a Dutch rabbit in which the white areas had attained a maximum extension so as to cover the entire coat. This interpretation seemed reasonable to me until I recently obtained in some breeding experiments animals similar to Baur's Vienna Whites, when it became clear that they have no relation to Dutch marking, and also that the relation of Vienna White to albinism is much closer than Baur had supposed.

The color factor of Vienna White is in fact an allelomorph of albinism. If Baur had used in the cross with Vienna White an albino whose parents were *yellow*, he would not have obtained colored young but only blue-eyed whites or albinos, which result would have shown that the two white varieties are not due to complementary factors but to allelomorphic conditions of one and the same factor.

The case is strictly analogous with that of the silver agouti guinea-pig as worked out by Castle and Wright[2] several years ago. The so-called color factor has in guinea-pigs several allelomorphic states, as shown by Wright. The two with which we were then concerned produce respectively (1) the ordinary albino or all-white coat associated with pink-eyes and (2) a condition in which the coat develops black pigment but no yellow pigment, and the eyes are red, not pink. By suitable crosses the gene for yellow coat can be introduced into the red-eyed variety. But since (1) the gene for yellow inhibits the development of *black* pigment in the coat and (2) the gene for red-eye (the color allelomorph) inhibits the development of *yellow* in the coat, it follows that the coat, in what is genetically a red-eyed yellow animal, contains *neither* black nor yellow pigment and so is white. Only the red eye-color then serves to distinguish the animal from an albino. It is in fact a red-eyed white in appearance, but genetically is a red-eyed yellow and if crossed with yellow animals will produce yellow young.

Now in rabbits we have a strictly parallel situation. The chinchilla[3] rabbit corresponds with the red-eyed silver agouti guinea-pig. Its coat contains black pigment but not yellow. If we cross chinchilla with albino, we obtain chinchilla young, not gray, indicating that chinchilla and albinism are allelomorphs, not complementary factors. If the albino parent carries the gene for yellow coat, then in F_2 we obtain chinchillas, albinos, and "blue-eyed whites." The last are obviously yellow chinchillas. I have not been able to obtain as yet the Vienna White variety from Europe, but those who have them can easily put this interpretation to the test by crossing Vienna White with a yellow coated variety. If my interpretation is correct, they will obtain yellow young from the cross.

[1] Einführung in die experimentelle Vererbungslehre, Berlin, 1914.

[2] Carnegie Institution of Wash., Publ. No. 241, 1916.

[3] Castle, W. E., Genetics of the chinchilla rabbit, SCIENCE, April 22, 1921.