flax must be regarded as aggregates of innumerable spirally wound crystalline fibrillae, the spirals being alternately right and left handed in successive lamellae.

The alternate layers of right and left hand spirals may be due to different forms of isomeric celluloses. A lamella with right-hand spirals may possibly be the result of the condensation and crystallization of a dextro form. This may leave the laevo forms in excess and so may influence the formation of more laevo forms. These on reaching the saturation point may crystallize out as a definite lamella of laevo crystals, *i. e.*, a lamella with left-hand spirals, and leave the dextro forms once more in excess. A continuation of this process would account for the alternation of right and left hand spirals in consecutive lamellae. It may also explain the sudden and periodic deposits of cellulose lamellae. Work with the aim of establishing or discrediting this hypothesis is now under way.

This much is known:

(1) Flax bast fibers are formed by the periodic addition of definite lamellae of pure cellulose to the existing walls and not by a continuous and gradual acquisition of cellulose particles.

(2) The lamellae are deposited out of contact with the existing wall in a much infolded, gelatinous condition and are subsequently pushed to the walls.

(3) There is no cementing material between the lamellae and they may readily be separated with proper treatment.

(4) The lamellae are composed of spirally wound crystalline fibrillae.

(5) Consecutive lamellae have spirals in opposite directions. This may be the result of the presence of isomeric forms of cellulose.

(6) These facts have an important bearing upon the elasticity, permeability, strength, durability and adsorptive powers of such fibers.

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SHOULD NEW FOSSIL SPECIES BE DESCRIBED FROM WELLS?

SUBSURFACE correlation work in various oil fields has brought to light a number of species of microscopic fossils that are new to science. There has been much informal discussion of the question which this paper now places before paleontologists—that is, should fossils found in wells be described as new species and published as such in recognized journals?

There are certain arguments against describing new species from wells. Chief among these is the impossibility of obtaining topotypes from "type localities." This was pointed out by Joseph A. Cushman when he stated the following:

> It is a rule of paleontology that new species should not be described from well borings because of the uncertainty of depth and the impossibility of giving a type locality from which future collections may be made.[1]

With improved methods of drilling, should this rule of paleontology be abandoned? If it is, how would future collectors obtain topotypes from type localities? Of course, a new rule might be established requiring that authors describing new species from wells deposit specimens, with complete data as to locality, in some recognized institution, such as the United States National Museum, or in several institutions prepared to care for type specimens. This method would overcome the objection to indefinite locations such as that in a paper by Frederick Chapman,[2] where a species is described "from a well in Santa Clara County."

There are a number of reasons in favor of so describing such fossils. The foremost of these is that a well sample is just as accurately located as a dredged sample, except insofar as age is concerned. Moreover, some formations are discovered in wells that are not present locally at the surface, as in the case of certain areas in Texas, Louisiana, Oklahoma and elsewhere. The description of new species from wells in these localities might aid in subsurface correlation. G. Dallas Hanna and E. G. Gaylord, with this in mind, described *Scalez petrolia* from the Midlands Oil Company's Well No. 1, San Joaquin Valley, California.[3] This fossil, according to Dr. Hanna,[4] has turned out to be an especially valuable "marker" in economic work. Esther Richards Applin doubtless adopted the same point of view when she described several new species and varieties of foraminifera from wells in the coastal plain of Texas and Louisiana.[5]

Even with the precautions mentioned above, should this procedure be recommended? The consensus of opinion of the west coast paleontologists who have been consulted in this connection seems to be in favor of describing new species from wells, for, as Pro-

[1] "Foraminifera from the Deep Wells of Florida," 13th Annual Report, Florida Geological Survey, p. 23, 1921.

[2] Chapman, Frederick, "Foraminifera from the Tertiary of California," Proc. Calif. Acad. Sci., 3d ser. geol., Vol. 8, 1900.

[3] "Description of a New Genus and Species of Freshwater Gastropod Mollusk (*Scalez petrolia*) from the Etchegoin Pliocene of California," Proc. Calif. Acad. Sci., 4th ser. Vol. 13, No. 9, pp. 147–149, March 18, 1924.

[4] Personal communication, January 21, 1926.

[5] In Applin, Ellisor and Kniker, "Subsurface Stratigraphy of the Coastal Plain of Texas and Louisiana." Bull. Amer. Assoc. Pet. Geol., Vol. 9, No. 1, 1925, pp. 79–122.

fessor James Perrin Smith has remarked to the writer, "A new species is a new species, no matter where it is found."

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THE PRICE OF HONOR

"Ph.D." 's letter in SCIENCE for April 16 moves me to quote a letter written me on May 28, 1925, from this same Professor Fritz Holm, G.D.G., LL.D., D.C.L., D.Lit., Chamberlain to His Royal Highness the Count of Caserta (Prince Alphonse of Bourbon-Sicily, Head of the Royal House of Naples).

On that occasion His Excellency's secretary informed me that His Excellency (then residing in Paris) had "read with interest and admiration of your Science League to combat silly attitudes by lawgivers and others towards questions of evolution, etc. His Excellency wishes me to inform you, that you may use his name in the literature of your league in capacity of honorary vice-president or simply vice-president."

I replied that the officers of the Science League of America were elected, that only members were eligible to office, and that membership was $3 a year. No reply was vouchsafed me. Evidently the "dollars (or bills)" are all supposed to flow in one direction!

MAYNARD SHIPLEY,
President, Science League of America

QUOTATIONS

CHEMISTRY AND DISEASE

DR. CHARLES H. HERTY recently pointed out that we spent annually $1,015,000,000 to keep our 115,000,000 bodies in repair, as follows:

Drugs, including patent medicines	$ 500,000,000
Doctors' services (estimated on basis of average income per doctor per year of $1,500)	220,000,000
5% interest on the $624,000,000 of hospital investments in lands, buildings and furnishings	31,000,000
Hospital maintenance	264,000,000
	$1,015,000,000

In commenting on this, Senator Ransdell, of Louisiana, in a speech supporting a bill providing for the appropriation of $20,000,000 for the study of the cause, prevention and cure of disease, asked whether it would not be worth while to spend a few millions a year in order to determine whether this vast bill of a billion could not be reduced. Much has been done privately, notably by the Rockefeller Institute for Medical Research, the Carnegie Institution of Washington and other institutes and laboratories. But in most of these institutions comparatively little time is allowed for concentrated work on problems of major importance, or opportunity given for cooperative effort of the chemist, the biologist, the pharmacologist, the therapeutist and the physiologist.

Senator Ransdell's bill, which he "hopes will be favorably acted upon at the next session of Congress," contemplates the enlargement of the Hygienic Laboratory of the Public Health Service into a chemo-medical research laboratory. Specifically, it provides for an appropriation of $2,000,000 a year for five years for this enlargement, and in addition $10,000,000 to establish an academy of health in the District of Columbia or its vicinity. In such an institution a joint attack may be made on fundamental problems of medicine by leaders in chemistry, physics, biology, pharmacology and medicine, just as, out in California, physicist, astronomer and chemist have brigaded their efforts in an attack upon the forces of the atom. A similar coordination of effort was made by scientists in search for poisonous gas during the war.

Research service in conservation of the health of the nation should not be left entirely to private interest, however generous, zealous and intelligent. Particularly is it desirable that chemistry should be brought back, in its highest development as a science, to the aid of the physician in the prevention of disease and the alleviation of suffering. It has turned its attention in recent decades mainly to the production of wealth in the industries. It has a higher ministry before it if it can be brought to cope with disease in time of peace, as its aid was invoked by the government for destruction during the war. We have gone further in our federal departments in concern for the health of the lower animals, and even of trees and plants, than we have for that of human beings.—The New York *Times*.

SCIENTIFIC BOOKS

A History of British Earthquakes. By CHARLES DAVISON. Cambridge, at the University Press, 1924.

THE authentic history of British earthquakes begins, according to the author of this accurate chronicle, with the year 974 A. D. Earlier occurrences, whose reality can hardly be doubted, but whose dates and places are not identifiable and whose character may be open to suspicion, are classed as legendary. We have here the keynote to Dr. Davison's work. It is scrupulously precise. Possibly mistaken or spurious records are rigidly excluded from his accounts, which nevertheless include 1,191 shocks in 950 years, 974 to 1924.

Geographical limitations are equally definite. The