

# SCIENCE

VOL. LXXI

FRIDAY, MARCH 14, 1930

No. 1837

<i>Science and Life</i> : PROFESSOR GRAHAM LUSK .....	271	<i>Scientific Apparatus and Laboratory Methods</i> :	
<i>The Relationship between Science and Engineering</i> :		<i>Displaying and Filing Microscopic Preparations</i> :	
DR. GANO DUNN .....	276	DR. A. T. RASMUSSEN and CAROL A. FISHER.	
<i>The Woods Hole Oceanographic Institution</i> : DR.		<i>A Tangent Meter for Graphical Differentiation</i> :	
HENRY B. BIGELOW .....	277	OSCAR W. RICHARDS and DR. PERCY M. ROOPE .....	289
<i>Scientific Events</i> :		<i>Special Articles</i> :	
<i>The Degree of Chemical Engineer at Cornell University; Gift of the Guggenheim Foundation to the Georgia School of Technology; Grants by the Committee of the National Research Council on the Effects of Radiation upon Living Organisms; Postponement to 1931 of Aeroarctic's First Expedition</i> .....	278	<i>The Germination of Seeds, Growth of Plants and Development of Chlorophyll as Influenced by Selective Solar Irradiation</i> : DRs. CHARLES SHEARD, GEORGE M. HIGGINS and WILLIAM I. FOSTER.	
<i>Scientific Notes and News</i> .....	281	<i>Some Practical Results of an X-ray Analysis of Cotton Fibers</i> : PROFESSOR. GEORGE L. CLARK, LUCY W. PICKETT and WANDA K. FARR .....	291
<i>Discussion</i> :		<i>Science News</i> .....	x
<i>The Proportions of the Great Pyramid of Gizeh</i> : DR. GORDON S. FULCHER. <i>The New Madrid Earthquake—an Unpublished Contemporaneous Account</i> : DR. WM. ALLEN PUSEY. <i>Biological Nomenclature</i> : PROFESSOR JUNIUS HENDERSON. <i>A Natural Cat Mummy</i> : PROFESSOR BRADFORD WILLARD. <i>Mouse Opossum Stowaways on Bananas</i> : DR. WALTER C. KRAATZ .....	285		
<i>Special Correspondence</i> :			
<i>A Biological Survey of Lake Erie</i> : PAUL R. BURKHOLDER .....	288		

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKEEN CATTELL and published every Friday by

## THE SCIENCE PRESS

New York City: Grand Central Terminal  
Lancaster, Pa. Garrison, N. Y.  
Annual Subscription, \$6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

## SCIENCE AND LIFE<sup>1</sup>

By Professor GRAHAM LUSK

DEPARTMENT OF PHYSIOLOGY, CORNELL UNIVERSITY MEDICAL COLLEGE

THE explorers of the heavens tell us they have located a galaxy of stars, the light of which, transmitted at the rate of 186,000 miles a second, has been traveling through space for a period of 140 million years before becoming visible to the eye. We may perhaps be pardoned if we take account of the position of some other things which are a little nearer to us. For example, the position of metabolism research has lately been defined by a friend of mine who told me that it was now so far advanced in this country that it needed no further support. It seemed to me to be regrettable that such opinions could be held anywhere. I mentioned this statement to my friend, Karl Thomas, of Leipzig, a former pupil of Rubner, and he comforted me by saying, "Why, the whole of life is metabolism."

<sup>1</sup> Delivered before the Piersol Anatomical Society, the University of Pennsylvania, Philadelphia, February 28, 1930.

A celebrated clinician once elaborated and published a wonderful interlocking endocrinological scheme regarding diabetes. About one out of four of his guesses was right; the other three are now in the receptacle devoted to scientific rubbish. And we witness year after year false interpretations of physical phenomena, because a younger generation has arisen which does not know and apparently does not care to know what the old masters knew of the phenomena of metabolism. It is too much trouble to learn about it. The younger generation wishes to do a few metabolism experiments of its own and to draw conclusions without any knowledge of the background of accumulated evidence which may render the conclusions invalid.

Rubner, during the war, lamented the clamor of those Germans who demanded the production of a super-bread, for he knew of work done fifty years before, which even educated physicians had forgotten,



# Pure Proteins of Milk

VS.

## Crude Casein

The pure proteins of milk are so difficult and expensive to prepare, that only too often the crude products are inadvisedly used in researches of importance.

One "crude essential element" of the diet may invalidate all other good features of a costly investigation, thereby disqualifying the deduction of the author.

*In recent journals such papers have appeared.*

"Crude Casein" of the usual industrial type represents simply an acid or rennet curd and is purely "Glorified Pot Cheese," containing unknown products of milk—in unknown amounts.

## FOR RESEARCHES OF PRECISION

"Casein-Harris" and "Lactalbumin-Harris"  
have been prepared

Through years of study in the Protein Laboratory of Osborne & Mendel (Yale Univ. & Conn. Expt. Sta.), we have learned how to prepare these two proteins in state of highest molecular purity.

Each protein contains highest nitrogen content, lowest mineral ash, freedom from each other and other substances of cow's milk.

They are made directly from fresh skim milk, which is the only possible way to prepare them in high purity.

Assayed upon growing white rats.

Free from all vitamins.

### AVERAGE ANALYSIS OF CASEIN - HARRIS

Moisture .....	10.73	Casein (N x 6.38).....	87.09
Ash .....	.59	Ether-soluble .....	.20
Calcium .....	trace	Nitrogen;	
Nitrogen .....	13.66	water, fat, ash-free....	15.44
(cf.—Osborne & Harris, Jr. Am. Chem. Soc., 25-IV, 346)			

Also

Purest powdered Medicinal Yeast  
(standardized for Vitamines "B" (F & G)) and Concentrates from this yeast.

Also

Vitamine factors, pure food mixes, deficient foods, salt mix and methods for vitamine assays upon the Norwegian white rat.

THE HARRIS LABORATORIES  
Tuckahoe New York

## School of Medicine Western Reserve University

Cleveland, Ohio

NEW LABORATORIES AND  
HOSPITALS  
RESTRICTED CLASSES  
THOROUGH INSTRUCTION  
LARGE CLINICAL FACILITIES  
HIGH STANDARD OF SCHOLAR-  
SHIP

Admission confined to students having aca-  
demic degrees and to Seniors in Absentia.

*For information address:*

THE REGISTRAR  
2109 Adelbert Rd. CLEVELAND

## JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

The School of Medicine is an Integral Part of the University and is in the Closest Affiliation with the Johns Hopkins Hospital.

### ADMISSION

Candidates for admission must be graduates of approved colleges or scientific schools with two years' instruction, including laboratory work, in chemistry, and one year each in physics and biology, together with evidence of a reading knowledge of French and German.

Each class is limited to a maximum of 75 students, men and women being admitted on the same terms. Applications may be sent any time during the academic year but not later than June 15th.

If vacancies occur, students from other institutions desiring advanced standing may be admitted to the second or third year provided they fulfill the requirements and present exceptional qualifications.

### INSTRUCTION

The academic year begins the Tuesday nearest October 1, and closes the second Tuesday in June. The course of instruction occupies four years and especial emphasis is laid upon practical work in the laboratories, in the wards of the Hospital and in the dispensary.

### TUITION

The charge for tuition for 1930-31 will be \$600 per annum, payable in two installments. There are no extra fees except for certain expensive supplies, and laboratory breakage.

Inquiries should be addressed to the Executive Secretary of the School of Medicine, Johns Hopkins University, Washington and Monument Sts., Baltimore, Md.

Graduates in Medicine who satisfy the requirements of the heads of the departments in which they desire to work are accepted as students for a period not less than three quarters. Tuition charge is \$50 a quarter.

## School of Medicine and Dentistry THE UNIVERSITY OF ROCHESTER

Medical School, Strong Memorial Hospital, School of Nursing and Out-Patient Department of the University of Rochester and the Municipal Hospital of the City of Rochester, all under one roof. Medical, Surgical, Obstetric, Pediatric, Dental, Contagious and Neurological patients admitted. Unusual opportunities for school and hospital co-operation in medical and graduate dental teaching.

### Admission

Medical candidates must have completed three years of college work with special requirements in chemistry, physics and biology. The entering class will not exceed 50, men and women being admitted on equal terms.

### Tuition

Charge for tuition will be \$400 per annum, payable in equal installments at the beginning of each semester.

*For information address*

THE DEAN  
School of Medicine and Dentistry  
Crittenden Boulevard, Rochester, N. Y.

## BOSTON UNIVERSITY SCHOOL OF MEDICINE

ORGANIZED IN 1873

### ANNOUNCEMENT

may be obtained by application to

THE REGISTRAR

80 East Concord Street,

Boston,

Massachusetts

## The Wistar Institute Bibliographical Service

is of invaluable assistance to

Investigators—Librarians—Teachers

It brings to them, in AUTHORS' ABSTRACT form, a brief review of all original papers on Biological Subjects which appear in the following journals:

**Journal of Morphology and Physiology**  
**The Journal of Comparative Neurology**  
**The American Journal of Anatomy**  
**The Anatomical Record**  
**The Journal of Experimental Zoology**  
**American Journal of Physical Anthropology**  
**The American Anatomical Memoirs**  
**Folia Anatomica Japonica** (Tokio, Japan)  
**Stain Technology** (Geneva, N. Y.)  
**Physiological Zoology** (Chicago, Ill.)  
**Publications of the Biological Survey of the Mount Desert Region**

### Advance Abstract Sheets

issued semi-monthly, bearing Authors' Abstracts without bibliographic references, offer a practical means of making research immediately available in abstract form and of purchasing articles of special interest in reprint form without the necessity of subscribing to all the journals. Subscription, \$3.00 per year.

### Bibliographic Service Cards

with complete bibliographic references, printed on Standard Library-catalogue cards, are of value and assistance to Librarians and Investigators. Subscription, \$5.00 per year.

### Abstracts in Book Form

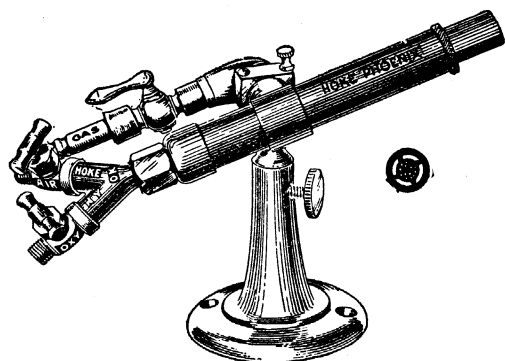
Abstracts referred to above are brought together periodically in book form with Authors' and Analytical Subject Indices. Price \$5.00 per volume, with liberal discount to regular subscribers to the Bibliographic Service Cards.

## The Wistar Institute of Anatomy and Biology

Thirty-sixth St. and Woodland Ave. Philadelphia, Pa.

## OK Hoke Oxy-Air-Gas Burner

For working Pyrex and Quartz Glass



A very versatile burner.

For Pyrex glass, use gas and air, plus more or less oxygen, as needed.

For quartz, use gas and oxygen.

Can also be used with soft glass.

Different from all other glass-working burners.

**Two Sizes.**

Shall we send you one to try?

Your dealer or



**Hoke Inc.**

Ask for Folder GW.

22 Albany St.,  
New York City

## The New York Homeopathic Medical College and Flower Hospital

Offers opportunity for highest grade medical training to one hundred men and women selected competitively.

In addition to thorough training in the Preclinical Sciences and the usual courses in Medicine and Surgery, special emphasis is given to Homeotherapy.

Seventy first annual announcement mailed to those interested.

450 East 64th Street  
New York City

## Allegany School of Natural History

In Allegany State Park, Quaker Bridge, N. Y.

Fourth Season—July 5 to August 23, 1930

Registration limited to fifty

Field studies in Botany, Zoology, Geology, Birds

Natural conditions favorable in richness and variety, suitable laboratories and equipment, comfortable living in a stimulating climate, guidance from experienced teachers and investigators.

Sponsored by the Buffalo Society of Natural Sciences, the New York State Museum, and the University of Buffalo (with college credit).

For circulars or registration, address until June 15:

**DR. ROBERT E. COKER, Director**  
Chapel Hill, N. C.

## BIOLOGICAL and NATURAL

## HISTORY MATERIAL



Zoological	Groups
Embryological	Slides
Botanical	Life Histories
Drosophila cultures	

Lamprey larvae (Ammocoetes)  
Prices on demand

Catalogs on request: Address

**Geo. M. Gray, Curator**  
Supply Department

## MARINE BIOLOGICAL LABORATORY

Woods Hole, Mass., U. S. A.