

the long chain of eat-and-be-eaten that begins with almost invisible gnawers like minute worms and water-fleas and builds up at last into salmon and sturgeon, walrus and mighty whale. Most of us know algae mainly as the highly unappetizing green scums that form on stagnant ponds; we do not recognize in them the fish-fodder that eventually turns up on our tables after many digestive metamorphoses.

But algae aren't just fish provender. They come to our notice, and affect our lives, in a score of other ways. They form green mats and scums on the soil, and apparently cooperate with bacteria in fixing atmospheric nitrogen as free fertilizer. They form the green "moss" supposed to grow only on the north sides of trees. (Actually it grows on any damp side of the trunk). Fossil beds of their silica shells provide scouring powder. Algae have even been found inhabiting our own important interiors.

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#### PHARMACY

### League of Nations Sets Standards for Drugs

**T**HE LEAGUE of Nations may not be able to stem the "rule of might" disease that is creeping over the world, but it continues to have scientific appendages that play important roles in the lives of the peoples of various nations.

Antitoxins, sera, drugs, vitamins and sex hormones, about 30 useful substances the activity of which can be measured only through use of laboratory animals, are standardized through international action fostered by the League of Nations Organization.

Curiously enough, it was war-time experience that played a leading role in convincing that national standards are not enough.

"Many deaths could have been averted," an official report says, "if the sera used during the war had been assayed in relation to a single standard. Doctors would not have been betrayed by the unitage given on foreign ampoules into injecting quantities of serum which they had good reason to regard as sufficient, but which were in fact inadequate, since the assay had been effected in terms of a unit of lesser potency than that to which they were accustomed."

Because drugs and biological products are exported and imported in peace times as well, it would be easier for manufacturers and safer for physicians and patients if uniform, international standards were used. And without standardization,

how can therapeutic results on two sides of a frontier be compared?

It is not surprising that as early as 1921 the League's Health Committee called an international conference on this problem. Keeping pace with scientific progress, the sex hormones are the latest class of substances for which standards are set. Written standards are not enough; national laboratories in Copenhagen and London keep and distribute

international standard preparations on behalf of the League Health Organization.

Diphtheria, tetanus, staphylococcus, and gas-gangrene antitoxins, anti-dysentery and anti-pneumococcus sera, insulin, pituitary extract, vitamins A, B<sub>1</sub>, C and D, digitalis, salvarsan, neosalvarsan, and sulfarsphenamine are among the substances standardized.

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#### GENERAL SCIENCE

## Eye Is Electric Generator, Current Tiny But Measurable

National Academy of Sciences, at University of North Carolina, Hears Reports From Many Fields of Research

**"E**LECTRIC glances," favorite phrase of old-time romantic novelists, is closer to literal fact than they ever guessed. For the human eye is an actual electrical generator, Prof. Walter R. Miles of Yale Medical School told the National Academy of Sciences, at the opening of their autumn meeting on the campus of the University of North Carolina.

The front part of the eye, Prof. Miles said, is electrically positive and the back part, where the retina is, has the opposite or negative charge. These differences in potential can be detected and measured by sticking thin pieces of metal foil on the skin at either side of the eye and attaching the wires to sufficiently delicate voltmeters. When the eye is held still, the instrument indicates steady voltage. As soon as you turn or roll your eye, you bring differently charged areas under the little electrodes, and the changes in the current show themselves on the dial.

Differences in potential, measured during a wide turning of the eyeball, range from .0002 to .003 volt for each eye. The amount of light falling on the eye at the time of measurement makes only a small difference in the result. One eye may differ markedly from its mate, just as people differ among themselves. Minor visual defects seem to make little difference.

That the eyeball itself, and not the surrounding muscle, is the source of the current was demonstrated when the tests were checked on persons who had lost one eye. If the eyeball is not there no current is generated, regardless

of whether the socket is left empty or filled with a glass eye.

### Cotton Under Microscope

**C**OTTON, on which so much depends in the South and in the nation, was put under the ultra-microscope by Prof. Donald B. Anderson of North Carolina State College. The wall of the cotton fiber, he said, is composed of exceedingly small thread-like strands of cellulose that branch and interlace freely with each other, forming a close-meshed network.

In the oldest layer of the cell wall the cellulose strands lie in flat, close spirals, but in the parts formed later the strands wind in steep spirals. It is possible to control the rate at which the cellulose is laid down by controlling the environment. This may mean eventually a control of the quality and kind of cotton by suitable adjustments of the conditions under which it is grown, especially as regards temperature and light.

### Increase Seed Size

**D**DOUBLE the number of chromosomes in the cells of a plant and it will yield bigger seeds and show other changes in the direction of general gigantism, Drs. A. F. Blakeslee and H. E. Warmke of the Carnegie Institution of Washington told the meeting. They provoked extra-chromosome plant types into existence by treating the parents with the drug colchicine.

Other effects of extra chromosomes Dr. Blakeslee mentioned were larger



### ELECTRICITY IN HER EYES

The beauty patches on this young lady cover electrodes ready to serve in the measurement of the differences in electric potential between the front and the back of her eyes.

flowers, increase in width, thickness, and greenness of leaves, shorter, thicker fruits, and larger stomata or breathing-pores. Together with Prof. E. W. Sinnott of Columbia University, Dr. Blakelee also found that increase in number of chromosomes in squashes and gourds caused their fruits to become shorter and wider than the parent type.

### Barytron Behavior

**B**ARYTRONS, which are sub-atomic particles 200 times as massive as electrons, were pointed out as responsible for sudden bursts or showers of cosmic rays, by Prof. L. W. Nordheim of Duke University. These heavy particles constitute the major part of all cosmic rays at sea level and under ground, but not in the upper atmosphere. Prof. Nordheim suggested that when a barytron passes through matter and collides with electrons that are part of the atoms in it, these electrons are knocked out of their circuits in sudden bursts, at high velocities, thus constituting the "showers."

### Find Waltzing Star

**A** STAR that carries on an unending waltz through space with a dark partner that no one has ever seen was described by Drs. S. A. Mitchell and D. Reuyl of the Leander McCormick Observatory of the University of Virginia. The star is known as Ross 614.

The weaving motion of the star can be traced, the scientists reported, indicating that it is whirling round and round a massive stellar body like itself, as do all the familiar double stars in which both members are bright, but the companion here is invisible.

A somewhat similar case is that of the giant dog star, Sirius, which has a massive companion whose light is exceedingly faint. But this is the first recorded case of a companion star that is totally invisible.

The faint star known to astronomers as Wolf 424, announced a short time ago to be earth's nearest neighbor in space, was "put back in its place" by the two astronomers. They told the Academicians that there are at least thirty stars nearer to the earth than this one.

### Poison Brings Immunity

**I**MMUNITY on the part of the most essential portion of the kidney to the action of one of the most destructive of all known mineral poisons can be developed by subjecting the kidney to the action of an entirely different poison and letting it recover. This strange physiological effect, quite different from the way in which the body becomes immune to bacterial and other organic toxins, was described by Prof. William deB. MacNider of the University of North Carolina.

When the kidney of an animal is

slightly injured by uranium nitrate, related Prof. MacNider, the cellular lining of the tubes that carry on the kidney's essential function is replaced by new cells of the original, normal pattern. Such cells are not resistant to a second poisoning with the same chemical compound.

If, however, the first dose of uranium nitrate is heavier, causing more severe injury, the self-repair that follows produces a different kind of lining cell in the tubes. The new cells are flatter in shape; and they are apparently physiologically tougher as well, for they cannot be injured by repeated doses of the uranium salt.

What is more remarkable, however, is the fact that they are also resistant to the action of bichloride of mercury, or corrosive sublimate, which is notorious for its selective and highly destructive effect on these particular cells in their normal state. In other words, the immunity of the repair cells produced by one poison is non-specific, but extends to another (and more severe) kind of poison. Other poisons to which the new cells have been found resistant are chloroform and alcohol.

### International Exchange

**S**CIENCE'S international character is to be stressed through a new exchange of lecturers between the United States and Great Britain, arranged for in London and supported financially by the Pilgrim Trust, which was established by Edward S. Harkness, an American. The new lectureship is to be known as the Pilgrim Trust Lectureship.

In alternate years, noted British men of science, chosen by the Royal Society of London, will come to America to speak on fundamental scientific achievements and problems; and in the intervening years leading American scientists, selected by the National Academy of Sciences, will return these "courtesy visits of learning."

The series will be inaugurated on Dec. 8 of this year, when Dr. Irving Langmuir of the General Electric Company research laboratory will speak in London.

The first English lecture will be presented in Washington during the spring meeting of the National Academy of Sciences, by Sir William Bragg, president of the Royal Society.

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A method of making sugar synthetically from formaldehyde has been patented.