

Anniversaries of Science

April 23, 1858—Birth of Max Planck, author of "quantum theory" of radiation.

It is difficult to formulate the quantum theory accurately within the compass of a nutshell, and in fact it is still not quite certain just what its kernel consists of. This much at any rate seems certain, that in the interactions between radiation and matter which result in the transference of energy from the radiant to the material form or vice versa there are processes which take place discontinuously and are incapable of description in mechanical terms. . . . The dynamically possible systems are restricted to those for which twice the value of the integral of the kinetic energy with respect to the time taken over a complete period is equal to an integral number n times a universal constant h , known as Planck's constant. Ordinary dynamics lays no such restriction on the motions which are possible.

—O. W. Richardson: *Physics in Problems of Modern Science.*

April 24, 1800—Sir William Herschel announced to the Royal Society his experimental procedure first demonstrating the presence of the infra-red spectrum. If a beam of sunlight is resolved by a prism into a visible and invisible rainbow, the blackened bulb of a thermometer placed in the region beyond the red part of the spectrum registers a rise in temperature. This Herschel observed and wrote:

. . . if we call light, those rays which illuminate objects, and radiant heat, those which heat bodies, it may be inquired, whether light be essentially different from radiant heat? In answer to which I would suggest, that we are not allowed, by the rules of philosophizing, to admit two different causes to explain certain effects, if they may be accounted for by one. A beam of radiant heat, emanating from the sun, consists of rays that are differently refrangible. The range of their extent, when dispersed by a prism, begins at violet-colored light, where they are most refracted, and have the least efficacy. We have traced these calorific rays throughout the whole extent of the prismatic spectrum: and found their power increasing, while their refrangibility was lessened, as far as to the confines of red-colored light. But their diminishing refrangibility, and increasing power, did not stop here: for we have pursued them a considerable way beyond the prismatic spectrum, into an invisible state, still exerting their increasing energy, with a decrease of refrangibility up to the maximum of their power; and have also traced them to that state where, though still less refracted, their energy, on account, we may suppose, of their now failing density, decreased pretty fast; after which the invisible thermometrical spectrum, if I may so call it, soon vanished. . . .

If this be a true account of solar heat, for the support of which I appeal to my experiments, it remains only for us to admit, that such of the rays of the sun as have the refrangibility of those which are

contained in the prismatic spectrum, by the construction of the organs of sight, are admitted, under the appearance of light and colors; and that the rest, being stopped in the coats and humors of the eye, act upon them, as they are known to do upon all the other parts of our body, by occasioning a sensation of heat.

—Sir William Herschel: *Philosophical Transactions of the Royal Society.*

Science News-Letter, April 9, 1927

PHYSIOLOGY

The Imperious Intestine

This week's prize winning poem in the Science Service scientific poetry contest.

(If the salt strength as a whole differs from that normally in the small intestine at rest, the intestine will promptly reject the mixture back into the stomach until it is of the right concentration)—Science News-Letter, February 26, 1927, p. 135.)

Ye gods; who now is sleeping on the job

That this unsalted chyme is sent my way!

After long hours of waiting for my chyle,

Who thinks I'll take this tasteless, sickish whey?

My million villi babes refuse to taste
The vapid pap, and will not suck it down;

They scream and writhe, 'till I am quite distraught,

Nor can my songs their wilder wailings drown.

You stupid Stomach, churning endlessly!

You concrete-mixer, keep your nauseous mess!

Your rennin and your pepsin can not help;

Call up that ostrich neck, Oesophagus,
And rouse the lazy taste-buds of the tongue.

Those at the front, and order us more salt,

Not ptyalin nor bitter, sweet nor sour,
We've traced it front, and theirs is all the fault.

Tell them to hurry, or in spite of bile
And pancreatic juice, I'll fling the whole

Back through the duodenum-hallway door,

And fill you mixers with the nasty dole!
Then you will ache and sicken, but no odds;

Your lazy carelessness is all to blame;
A billion body-cells cry out for food,
And sleeping sentries are an army's shame.

"More salt! More salt!" my million villi cry.

More salt, you stupid Tongue! More salt, you Bag!

Send me more salt or in an instant choke

I'll choke you both with this unsavory gag!

—Ethel E. Griffith.

Science News-Letter, April 9, 1927

PSYCHOLOGY

Feeling Speech Aids Deaf

Feeling speech through the skin will enormously speed up the slow process of educating deaf children, is the prophecy made by Dr. Robert H. Gault, of Northwestern University, who spoke recently at the Franklin Institute.

For four years Dr. Gault has been doing pioneer work under the auspices of the National Research Council to determine whether the skin is sufficiently sensitive for deaf people to distinguish sounds vibrating against their fingers. In his experiments, words spoken by one individual are amplified by electrical apparatus and transmitted to a vibrator which the deaf person holds in his hand. Each sound that makes up speech has its own characteristic vibration which the deaf person learns to know by touch.

"Two deaf people who worked in my laboratory a little less than 300 hours were able to pick up a story from the feel of it when the speaker was out of sight," said Dr. Gault. "This is no more uncanny than is learning to know any other thing in the dark by its feel."

When the deaf person watches the lips of the speaker and at the same time feels the speech vibrations, he can understand what the speaker says from 30 per cent. to 100 per cent. better than he can when he depends entirely on reading the lips, Dr. Gault has found. Since lip-reading is now a standard method of teaching the deaf to understand speech, he believes that the sense of touch can be used to great advantage in these schools to make lip-reading more effective.

Science News-Letter, April 9, 1927

ARCHÆOLOGY

Home Brew In Babylon

Brewing beer was a respectable household task among families along the Tigris and Euphrates Rivers 9000 years ago. Evidence of this high antiquity of the craft of brewing and its place in ancient social systems of Babylonia and Egypt has been traced by German scientists of the Society of History and Bibliography of Brewing.

There were laws about drinking in those days, the report shows. Certain rations of beer were allowed to each class of workers. Beer was also used in mixing medicines, and as an offering to the gods. Brewing was an organized business as early as 5000 B. C., it is stated.

Science News-Letter, April 9, 1927