brain research notes

Gathered at the third international conference on the Future of the Brain Sciences in New York.

MEMORY

Drug trials set for retarded children

Human trials with a new memory enhancing drug will be held this summer. Dr. James L. McGaugh, professor at the University of California, Irvine, plans to try Metrazol, on mentally retarded children, in an effort to improve their learning ability.

Metrazol (pentylenetetrazol) belongs to a class of convulsant drugs and is currently used against fatigue and to increase alertness among the senile.

Dr. McGaugh's experiments with mice, however, indicate that Metrazol may be more than a stimulant. Mice, given the drug immediately after their training in a maze, performed up to four times better than untreated animals, even 24 hours after administration, allowing time for the Metrazol to disappear from the system.

For these reasons, Dr. McGaugh believes the convulsant drugs may actually affect memory storage, unlike magnesium peneline, which was hailed two years ago as a memory-enhancer, but turned out to be only a stimulant.

DEPRESSION

Treatment with hormones

A successful method of treating psychotic depression with both antidepressant and hormone drugs is reported by Dr. David J. McClure, assistant professor of psychiatry at McGill University, Montreal.

The hormone used was dexamethasone, normally used against inflammation in joints and other body parts. The drug replaces the naturally occurring hormone cortisol.

Dr. McClure bases his therapy on the theory that depressive illness is characterized by a deficiency of both brain hormones and amines. It has been known for several years that the amine, nerephinephrine—a chemical transmitter for nerve signals—is low during depression and is elevated by antidepressant drugs. But the implication of hormones is new.

Dr. McClure believes the hormones in effect pave the way for proper functioning of the amines. He used dexamethasone as a primer for the antidepressant drug in 17 patients and found their response to be much faster than with antidepressant medication alone.

SCHIZOPHRENIA I

Blood researchers collaborate

Scientists are moving closer to identification of an abnormal factor in the blood of schizophrenic patients with efforts to compare isolated bits of information from several laboratories.

The Lafayette Clinic in Detroit and the Worcester Foundation for Experimental Biology in Worcester, Mass., have exchanged and analyzed their separate blood plasma fractions. By all indications, the two are working with the same factor—an alpha 2 globulin which is highly unstable and readily lost in the metabolic process.

So far, attempts to identify the active chemical in this plasma extract have not been fruitful, but Dr. John R. Bergen of the Worcester Foundations says it could be DMPEA—the so-called pink spot found in the urine of schizophrenics (SN: 11/20/65, p. 323). DMPEA (dimethoxyphenylethylamine) is a close relative of mescaline and a product supposedly poorly metabolized in the bodies of schizophrenics.

Dr. Bergen says DMPEA falls within that class of compounds that could be associated with the plasma factor. Also it has effects on rat behavior very similar to those seen with the blood extract; when injected directly into the brain, DMPEA has potent, disruptive effects.

SCHIZOPHRENIA II

More on the pink spot

Dr. Arnold J. Friedhoff of the New York University School of Medicine, one of the first to identify DMPEA, or the pink spot, in urine of schizophrenics, presents further evidence on its metabolic pathways.

While DMPEA is found only in schizophrenics, a derivative of this chemical, called DMPAA, is found in both normal people and schizophrenics. The hypothesis is that some defect of metabolism prevents normal degradation of DMPEA into its non-active derivatives.

Dr. Friedhoff has found that DMPEA is degraded through other routes than just DMPAA. One such product turned out to be even more potent than the hallucinogenic drug, mescaline, when tested on animals.

Exactly which pathway is blocked in schizophrenic patients is unclear, but the evidence is now strong that DMPEA and at least one of its metabolites is psychologically disruptive. Schizophrenic patients, unlike normals, excrete unchanged DMPEA. DMPEA itself is a metabolic product of naturally occurring amines found in brain and body. But there is evidence that the brain metabolizes these amines in a different manner than the body, which would help explain difficulties encountered in the work with plasma and urine.

SCHIZOPHRENIA III

Taraxein given second look

An effort will be made to replicate the work of Dr. Robert Heath, Tulane University scientist who has so far developed the most detailed, but still controversial, explanation of schizophrenia. (SN: 2/11/67, p. 141).

The Worcester Foundation for Experimental Biology, Worcester, Mass., has been awarded a Federal grant and will begin work "as soon as the monkeys come out of quarantine," reports Dr. John R. Bergen.

Dr. Heath stimulated work on blood plasma several years ago when he isolated taraxein from the serum of schizophrenic patients. When injected into monkeys or human volunteers, taraxein supposedly causes schizophrenic-like behavior. Other investigators have been unable to confirm these findings as yet.