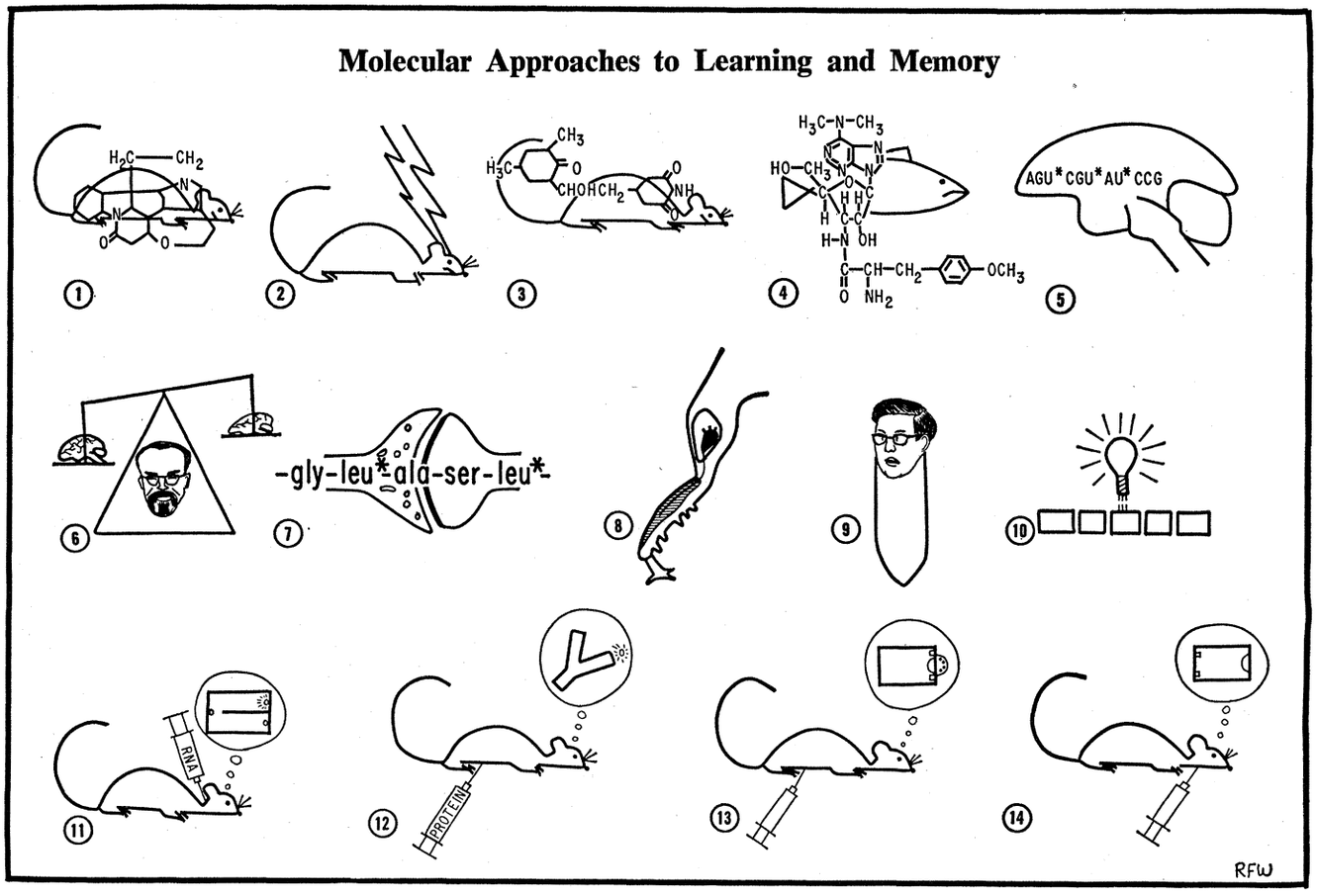

Symposium, 29–30 December 1967, AAAS Annual Meeting, New York City
Arranged by and presiding: William L. Byrne (Duke University)

29 December

(The topics of the numbered speakers are illustrated above.)

1) James McGaugh (University of California, Irvine)—*Drug Facilitation of Memory Storage.*

2) Murray Jarvik (Albert Einstein College of Medicine)—*The Consolidation Process in Memory.*

3) Samuel Barondes (Albert Einstein College of Medicine)—*Critical Behavioral Variables in Studies of the Effect of Inhibition of Protein Synthesis on Memory Storage.*

4) Bernard W. Agranoff (University of Michigan)—*Memory Formation in the Goldfish.*

5) John Zemp (University of North Carolina)—*The Effect of Training on the Incorporation of Radioactive Precursors into RNA of Mouse Brain.*

6) Edward Bennett (Lawrence Radiation Lab.)—*Transitory Effects of Experience on Brain Weight and Behavior.*

7) Stanley Appel (Duke University)—*Macromolecular Synthesis in Synaptosomes.*

8) Melvin J. Cohen (University of Orgeon)—*Nerve Regeneration and Behavior in Insects.*

9) William Corning (Fordham University)—*The Planarian Controversy: A Question of Replication.*

10) William L. Byrne (Duke University)—*Current Status of "Memory Transfer."*

11) Ejnar Fjerdingstad (University of Copenhagen)—*A Comparison of "Transfer" Results Obtained with Two Different Types of Extraction and Injection Procedure, Using Identical Behavioral Techniques.*

12) George Ungar (Baylor University)—*Chemical Transfer of Learned Behavior.*

13) Stanislav Reinis (University of Ghana)—*Some Applications of "Memory Transfer to the Study of Learning."*

14) Frank Rosenblatt (Cornell University)—*Induction of Discriminatory Behavior by Injection of Brain Fractions.*

30 December

David Samuel (Weizmann Institute) will preside.

James V. McConnell, Harold Salive, and Tsuyoshi Shigehisa (University of Michigan)—*Attempts to Transfer Conditioned Avoidance Responses in Rats.*

James A. Dyal and Arnold Golub (Texas Christian University)—*Behavioral Transfer via Injection of Brain Homogenate: Activation or Specificity?*

Otto Wolthuis (National Defense Research Organization T.N.O., Netherlands)—*Interanimal Information Transfer by Brain Extracts Studied in Various Different Tests.*

William B. Rucker and Ward C. Halstead (George Washington University and University of Chicago)—*Memory: Antagonistic Transfer Effects.*

David Krech, Edward L. Bennett, and Peter Ragan (Laboratory of Biodynamics and University of California, Berkeley)—*Effects of Brain Homogenate on Reinstatement of Early Memory.*

Walter B. Essman (Queens College of the City University of New York)—*Purine Metabolites in Memory Consolidation.*

A molecular approach to learning and memory does not assume that a detailed mechanism will be outlined and documented in the immediate future, but it does mean that experimental efforts can be placed in a framework which is consistent with current concepts of molecular biology. This framework may then be used to design experiments. For those who feel that molecular approaches are premature, it should be pointed out that Ward C. Halstead, in 1947, proposed "molecular models" based on protein organization and suggested specific experimental designs which were subsequently pursued in a number of laboratories (J. J. Katz and W. C. Halstead, *Comp. Psychol. Monogr.* **20**, 1–38, 1950). With the support of historical perspective and the confidence engendered by recent advances in our understanding of living processes at the molecular level, a symposium was organized in order to present and evaluate current experimental procedures which may be considered as molecular approaches to learning and memory.

Emphasis has been placed on procedures which have made it possible to detect multiple stages in the process of memory storage. These procedures also suggest the involvement of macromolecules. The multiple stages (short-term memory and two or more stages of long-term memory) serve as a working model for attempts to correlate specific chemical and anatomical changes with the storage process. This emphasis, together with the emphasis on "memory transfer," meant that many basic types of information which are fundamental to current working models would not be properly represented. One of these types, however, the body of information which strongly indicates the specificity of the developmental process is represented by nerve regeneration experiments carried out with the transplanted metathoracic ganglion of the cockroach. Macromolecular synthesis in synaptosome preparations must also serve as a representative contribution for past and present fundamental studies on the role of the synapse in the integrated nervous system.

Particular emphasis has been placed on the new and controversial field of behavioral modification by injection of brain-derived materials, so called "memory transfer." If these observations are related to the molecular basis of long-term memory, they represent a direct experimental approach at a time when other approaches must depend on correlations. It is clear that these experiments are reproducible within individual laboratories over a period of one to two years. Additional laboratories are finding behavioral modifications which are consistent with "memory transfer." However, even though these positive reports include a great variation in the type of material injected, the route of injection and the behavioral methodology, the general acceptance, and usefulness of these observations require procedures which are reproducible within a single laboratory and reproducible in other laboratories. Several laboratories have organized a cooperative attempt to develop and test specific experimental procedures. The symposium will include a progress report on this cooperative effort.

The afternoon program on 29 December includes representatives of three of the first five laboratories which independently published data indicating that the injection of brain-derived materials resulted in behavioral modification which were consistent with "memory transfer." These representatives will review and extend their published observations. The published results of the two laboratories which are not represented will be reviewed as part of the presentation on the current status of "memory transfer." The first presentation in the afternoon will review and summarize the information available on planarians as experimental animals for experiments on learning and memory.

WILLIAM L. BYRNE
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Placement Service

The New York State Employment Service, in cooperation with the United States Employment Service, will provide a Convention Placement Center at the 1967 Annual Meeting of the American Association for the Advancement of Science at the Americana Hotel, New York City.

Facilities will be provided for reviewing job orders and applications, exchanging messages, and conducting interviews from 1:00 p.m. to 5:00 p.m., 26 December; from 9:00 a.m. to 5:00 p.m., 27–29 December.

Pre-convention registration will be conducted until 1 December.

Orders and applications will be reproduced and filed in binders by categories for review by interested employers and applicants. Exact details on the procedure for using the convention placement service facilities at the hotel will be presented in an instruction sheet available at the AAAS Registration Desk or the Convention Placement Center.

To register for this service, applicants and employers may request applications and order forms by writing to:

Mr. Irving Smith
Professional Placement Center
New York State Employment Service
444 Madison Avenue
New York, New York 10022