C.C. Little and the Jackson Laboratory Archives: Some Notes on the Intersecting Histories of Eugenics, Mammalian Genetics, and Cancer Research, by Karen Rader

If the APS collections and the Mendel Newsletter are good indicators, then both the Jackson Laboratory of Bar Harbor, Maine and its founder Clarence Cook Little (1888-1971) have been recurring -- yet elusive -- nodes in the archival history of 20th-century American genetics and medicine. In her 1981 MN description of the APS' W.E. Castle papers, for example, Mardi Bettes Fuller noted several letters from Castle to L.C. Dunn, some of which discuss the elder geneticist's concern over the "future prospects" of the Jackson Laboratory and of Little. Also, Lily Kay's 1989 APS archival guide, Molecules, Cells, and Life, mentioned that the collections of several important medical researchers and administrators, such as J.B. Murphy and Alexander Hollander, contain correspondence with Little or other Jackson Lab workers. And most recently, in their 1993 MN piece on the dispersal of the Eugenics Records Office archive, Joe Cain and Kim Koehler reported that some original ERO material is now under the stewardship of Thomas Roderick, a Jackson Lab scientist in Bar Harbor.

So what is the historian of science to make of these tantalizing tidbits? Why would an important geneticist like Castle have been interested in the stability of this small, provincial institution? Why would prominent medical men be corresponding with the Jackson Lab? And, perhaps most provocatively, what historical interest might a current Jackson Lab scientist have in some old eugenics papers? The answers to these questions lie first, in an awareness of the intersecting histories of eugenics, mammalian genetics, and cancer research in early twentieth-century America; second, in an appreciation of the key role played by Little and the Jackson Lab in this historical network; and finally, in a more comprehensive archival perspective on the history of both the Jackson Lab and its director.

Historians of American biology have long acknowledged the relationship between the rise of eugenics as a social movement and the emergence of genetics as an experimental science in the early twentieth-century. In most accounts about this period, however, mammalian genetics receive little attention -- despite the fact that a mammalian geneticist, Harvard's W.E. Castle (1867-1962), published one of the earliest and most successful college textbooks on Genetics and Eugenics, and produced many of the first American PhDs in the field. Although Castle's own research focused primarily on the relationship between heredity and evolution in domesticated mammals, the rise of eugenics in the late 19th century provided Castle with a new field of inquiry, one that would eventually lead to his textbook and his many students. And while Castle's work on heredity and evolution was important, it was the intersection of eugenics with genetics that would ultimately shape the field of genetics in the early 20th century.

Historians of American biology have long acknowledged the relationship between the rise of eugenics as a social movement and the emergence of genetics as an experimental science in the early twentieth-century. In most accounts about this period, however, mammalian genetics receive little attention -- despite the fact that a mammalian geneticist, Harvard's W.E. Castle (1867-1962), published one of the earliest and most successful college textbooks on Genetics and Eugenics, and produced many of the first American PhDs in the field. Although Castle's own research focused primarily on the relationship between heredity and evolution in domesticated mammals, the rise of eugenics in the late 19th century provided Castle with a new field of inquiry, one that would ultimately shape the field of genetics in the early 20th century.
C. C. Little was among the first in a long line of Castle protégés. Born into a prominent Boston family, Little attended Harvard from 1906 to 1910 and became a well-known student leader. He signed up for Castle's genetics class and quickly developed such a strong commitment to scientific work that, in his sophomore year, Castle put Little in charge of his mouse colonies. After graduation, Little enrolled as Castle's graduate student at Harvard's Bussey Institution. "The Bussey," as the students called it, was located in Forest Hills, ten miles away from the Cambridge campus, and it was intended to be Harvard's graduate school of applied biology and agriculture. But from 1909 to 1936, it was also home to Castle and Edward Murray East, who together trained over forty American PhD students in genetics. The roster of Genetics Society of America presidents stands as testimony to this group's subsequent influence: the first seven were once Bussey students.

While at the Bussey, Little continued working with Castle's mouse colonies, but he also began pursuing independent projects in the medical applications of genetics. Little's dissertation research, based on his observation of over 10,500 mice, explored the basic genetics of mouse coat color inheritance, with special reference to dominance and epistasis. From 1913 to 1917, however, he shifted to the study of the multifactorial inheritance of tumor susceptibility in mice. Much of this work was carried out in collaboration with E.E. Tozzer of the Harvard Medical School. In 1914, Little published a theoretical paper which suggested that "certain characteristics of an organism depend for their visible manifestation ... upon the simultaneous presence of more than one mendelizing factor." In such cases, Little asserted, a Mendelian statistical analysis demonstrated that as the number of factors involved increased, the ratio of observed F2 animals which do not show the trait to those that do would also increase. Little later used this theory to explain data from his mouse breeding experiments, as well as data from previous human and animal cancer heredity studies, in which a tumor condition dominant in the F1 generation appeared to "almost completely disappear in the F2."

Though several historians have noted that medicine and eugenics maintained an at-best ambivalent disciplinary relationship during this period, Little's research on the relationship between heredity and disease was by no means unique. In fact, by 1921, the inheritance of human and mouse cancers had captured the attention of several researchers, trained both in medicine (e.g. Leo Loeb, James B. Murphy, and Maud Slye) and in genetics (e.g. Clara Lynch and Leonell Strong). Little was unique, however, in his commitment to developing a practical tool for linking these medical and genetic interests: namely, the first healthy, genetically-homogeneous inbred mouse strain. In 1909, Little began brother-sister mating of a mouse genetic type known as dba (dilute brown agouti). Little had noted that mice descended from dba parents typically displayed a high frequency of cancer incidence, and by inbreeding them, he hoped to stabilize the genetic factors responsible for the tumors. Through many years of persistence, careful selection of healthy organisms, and large-scale breeding, Little overcame the loss of vigor and fertility that usually plagued inbred animals. Little subsequently argued to both geneticists and medical researchers that the resulting organisms represented a predictable and replicable source of mammalian experimental material, and that inbred mice from dba and other strains could be invaluable for the study of genetics and cancer.

Over the next ten years (1918 to 1928), Little developed a new career in academic administration, though he never completely abandoned scientific research or eugenic ideals. From 1919 to 1921, he was research associate and assistant director of C. B. Davenport's Station for Experimental Evolution at Cold Spring Harbor, NY. Little, therefore, was directly connected to the work of the Eugenics Record Office; notably, he helped supervise the work of some animal caretakers and ERO field workers, one of whom (Beatrice Johnson) he later married. In 1922, after giving a speech on education at Orono, he was offered and accepted the presidency of the University of Maine. For the next three years he led a summer field course for zoology students in Bar Harbor. Then in 1925, Little was recruited to become the University of Michigan's president, in the hopes that he would bolster the school's research reputation. There, he continued his work with inbred mice, and in 1926, he inaugurated a Cancer Research Laboratory at Ann Arbor. But shortly after his arrival, Little gained national attention in a well-publicized debate on eugenics and birth control with Michigan religious leaders. This; precipitated the first of a number of clashes between Little and the Michigan regents, who ultimately forced his resignation in 1928.

Little's next move was perhaps as much a testimony to his administrative and entrepreneurial talents as to the viability of his cancer genetics research program. He convinced several Detroit automobile industrialists, including Edsel Ford and Roscoe Jackson, to provide funds for the continuation of his scientific work at an independent research institute. In 1929, shortly after Jackson's untimely death, Little opened the Roscoe B. Jackson Laboratory in Bar Harbor (so-named after its primary patron), and he relocated his inbred mice and the entire Michigan lab staff to these newly-built headquarters.

Little spent the next twenty-seven years as the Jackson Laboratory's director during which time he also achieved national prominence as a scientific administrator. From 1929 to 1945 he served as, managing director of the American Society for the Control of Cancer (ASCC) and was twice president of the American Society for Cancer Research. In 1932, he acted as general secretary to the Sixth International Congress of Genetics. Little was appointed to the original U.S. National Advisory Cancer Council in 1937, and from 1925 to 1945 he - continued to serve as scientific director of the American Birth Control League.

The Jackson Lab (as it came to be known after 1963) was officially dedicated to interdisciplinary research on mammalian genetics and cancer. But it also quickly became an international center of large-scale inbred mouse production and distribution for all types of biological research. In 1933, Little began selling so-called "JAX mice" (named from the institution's abbreviated cable address) in order to make financial ends meet during the Depression. As a result of Little's efforts, by 1945, the JAX mouse was widely considered "the" standard laboratory mouse, especially in genetic and cancer research circles; many researchers would write to Little or other JAX workers, inquiring as to the best strain for their particular research problem. Today, Little's legacy to these fields remains alive and well: worldwide circulation of JAX mice now exceeds two million organisms a year, and the NRC has recently named JAX as a unique II national repository* for specialized mouse genetic strains.
The Lab itself has maintained an historical archive ever since it was rebuilt following the devastating 1947 Bar Harbor fires. The primary materials are loosely, organized into 28 boxes (#1-18 regular grey archival boxes and #19-28 smaller archive boxes). This archive, although not comprehensive, documents much of the institution’s later internal history, including Little's final years as director and the transition to its second directorship (1957-1975) under Earl Green, a former student of Bussey-alum Paul Sawin. For example, several boxes (#1, 3, 6) contain multi-year runs of internal JAX publications from the 1950s and ‘60s (e.g. RBJ Newsletter, RBJ Quarterly, Jackson Laboratory News, The Jaxonian), as well as a full run of Annual Reports made to Lab's Board of Trustees during Little's directorship (1937 to 1955; #20). Other institutional materials include: post-fire Building and Library Committee reports; notes and policy statements regarding the establishment of the JAX Inbred Mouse Nucleus, Pedigreed Expansion Stocks, and mouse sales (1955-1960, 1970-75); Miscellaneous memos and minutes of JAX Scientific Staff Meetings (1956-1972); JAX Summer Student and Summer Investigator reports and correspondence (c. 1953-1957); Beatrice Johnson Little's gossipy Jackson Laboratory Newsletters (1949-1956); several committee reports, reports on research, and management plans (1950s); Earl Green’s “Monthly Summaries” (1963-1975); and a good collection of various newspaper clippings, anniversary publications, fund-raising materials, and publicity pamphlets from the 1940-70s.

Some of the JAX archive material pertains to the experimental work of individual mouse researchers once associated with JAX or its scientists. Thus, the Lab holds Peter Gorer's 1935-36 Laboratory Notebook, which details some of the experiments he and JAX Nobel laureate George Snell simultaneously—but independently carried out on histocompatibility genetics, as well as Bussey mouse provider A.E.C. Lathrop's 1912-1918 mouse breeding and sales records, which came to JAX via the Rockefeller Institute’s Clara Lynch. Also, some items shed light on JAX's developing institutional role in the wider genetics and cancer research communities. For example, the main archive contains extensive correspondence related to JAX’s role in the Committees on Standardized Genetic Nomenclature for Mice (1949-1975), including the development of lists of standardized mouse strains for publication in Cancer Research (1953-1970s). In addition, there are several grant proposals (c. late 1940s) made to the Rockefeller and Ford Foundations for some eugenically-minded JAX work on behavioral genetics.11

Apart from the main boxes, the JAX archive also contains two large boxes of Little's personal files and correspondence for 1953-54, which some staffers recently recovered from an old JAX building. These provide an invaluable perspective on Little's personal commitment to the JAX institution, especially with regard to fund-raising. In one letter, for example, he even suggested appealing to Walt Disney for funds to make a film about how “the Jackson Laboratory ... has done for the mouse in science what Disney has done for it in amusement” (5 November 1953). Finally, the JAX Joan Staats Library also maintains a full run of Mouse Newsletters (since 1941) and the related Mouse Subject Strain Bibliography (1948-1984; 74,927 records); a JAX staff bibliography, dating back to 1929 (4434 records); and a phenomenal photo collection (3000+ items, c. 1947 to present; 2-3 boxes, plus scrapbooks), which, for example, houses the original prints of the 1954 “live” re-creation of Castle’s intellectual lineage (Castle’s students and their students), at JAX’s 25th-anniversary celebration.12 The library is currently on the World Wide Web, and soon, many of its archival materials will also be accessible via computer interface (for more information, contact librarian Douglas Macbeth at dtm@aretha.jax.org).

Little’s papers are also located in Maine but at a different venue -- the Raymond Fogler Library at the University of Maine in Orono. This collection (23 archive boxes, #726-748) contains a large amount of material related to Little's personal life. There are two boxes of Little's own personal papers (#726-727, including an undergraduate zoology notebook and an unfinished manuscript of his autobiography, which goes only through age 10!). Nearly three whole boxes (#728-729, 746) are devoted to the papers and photo collections of his wife Bea, and their two children, Laura and Richard.

But the Little Papers also include a great deal of documentation on Little's multi-faceted career as a scientist and administrator. Notably, more than six boxes (#730-735, 738) contain materials pertaining to "research science" and "genetics," and there are two boxes of Little's "professional correspondence" (#739-740), which cover the period from 1918 to his death in 1972. Included in the "science" boxes are many reprints, but there are also important documents (letters, incorporation papers, etc.) pertaining to the 1929 founding and early (1928-1937) work of the Jackson Laboratory. These are especially well supplemented by the correspondence, which is most comprehensive and revealing for the pre1947 period. Here we learn, for example, of Little's struggles with Castle over the importance of doing genetics "on subjects of interest to medical men" (to W.T. Bovie, 18 December 1918); of his role in the "Mouse Club of America" at Cold Spring Harbor; and, later, of the difficulties both he and his JAX scientific workers experienced as a result of his simultaneous career commitments to research work, lab administration, and cancer research policy-making.

There are also three boxes (#741-743) dealing with Little's tenure as a college president. But while the Michigan materials (#742-43) discuss Little's laboratory and administrative arrangements in some detail, the Maine-related documents are not very useful in this regard. Perhaps more relevant sources on Little's scientific work at Orono are contained in the Clarence Cook Little University of Maine Presidential Papers (also at the Fogler Library), but much of this collection is still subject to restricted access. The remaining boxes in the Little papers are devoted to Clarence and Bea Little's work on behalf of birth control from 1926-27 (#738); drafts and reprints of C.C. Little's non-scientifically oriented "essays," usually speeches or popular articles (1932-1968, #744-45); and papers and articles pertaining to his last job (i 957-1971) as Scientific Director of the controversial Tobacco Industry Research Council (#736-37).

In closing, I should note that while the JAX Archive and the Little Papers contain extensive archival material, they are not the only existing collections relevant to the history of the Jackson Lab and its founder. The University of Michigan (Bentley Historical Library) has C.C. Little Presidential Papers, which more comprehensively detail Little's career at Arm Arbor. The Rockefeller Foundation and General Education Board Papers, housed at the Rockefeller Archive Center in Tarrytown, NY, help fill several of the JAX archive's gaps for the period from 1935-1945. For example, the RAC holds grant proposals, correspondence, and behind-the-scenes documentation about Little's negotiations with Warren Weaver and Alan Gregg over funds for scientific research (at Michigan, c. 1924-1925 and JAX, c. 1933-
Refraction and Reflexivity in the History of Genetics: 
The Tracy M. Sonneborn Papers at the Lilly Library 

by 
Judy Johns Schloegel
Indiana University

Like light through his microscopes, Tracy Sonneborn’s contributions to the history of genetics offer both refractory and reflexive insights to historians. When he died in January 1981, Sonneborn (b. 1905) left a legacy that will permanently enrich historical inquiry of twentieth-century genetics. Sonneborn, a ciliate geneticist, possessed not only a maverick research agenda to which he owes his greatest renown, but a deep, historical and philosophical commitment similar to that of his close mentor, Herbert Spencer Jennings. As Chairman of the Genetics Society of America Committee on Historical Documents in 1978, in concert with Whitfield J. Bell, Jr. and H. Bentley Glass, Sonneborn persuasively encouraged his colleagues to deposit their papers at the American Philosophical Society Library or at the libraries of their home institutions. Historians are now the direct beneficiaries of his efforts, since many of these collections -- several of which have been described in this Newsletter -- are now available for historical use.

In addition to this archival boon, however, Sonneborn’s historical reflexivity presents a challenge for historians. His own collection of papers and manuscripts, the Tracy M. Sonneborn Papers, located at the Lilly Library at Indiana University in Bloomington, Indiana, are estimated to contain more than 75,000 items; unfortunately, they remain today largely unprocessed and uncatalogued. Careful examination of the contents of this massive collection, however, suggests that Sonneborn was keenly aware that his correspondence,
The value of Sonneborn's papers is enhanced further by the refractory role which he played in the development of modern genetic thought. Throughout his career, Sonneborn defied many of the dominant trends in genetics by rejecting the strident reductionism that increasingly characterized the field. Nonetheless, as a founding practitioner in the 1930s of the molecular biological principle of utilizing microorganisms as model organisms in the study of genetic phenomena, and as an enthusiastic and effective communicator of his research and ideas, Sonneborn maintained throughout his life a preeminent position in the genetics community. He served as president of both the American Society of Naturalists and the Genetics Society of America in 1949, the American Society of Zoologists in 1956, and the American Institute of Biological Science in 1961. He was elected to membership of the National Academy of Sciences in 1946, receiving the Kimber Award for Genetics from the Academy in 1959, and was elected to membership of the American Philosophical Society in 1952. In 1950, Warren Weaver believed that the research conducted in Sonneborn's laboratory offered outstanding insights into the complex developmental genetic interactions in cells, and voiced enthusiastic intentions to nominate him for a Nobel Prize. The fact that Sonneborn's efforts were not rewarded with a Nobel Prize, despite his prominent status in the genetics community, is however, an important indicator of the relatively modest impact his research made upon the broader landscape of genetic thought.

Beginning in 1930 and continuing until his death, Sonneborn's research programme revolved nearly completely around a single organism, the eukaryotic unicell, Paramecium aurelia. After completing studies on the hereditary effects of environmental factors in the flatworm Stenostomum for his Ph.D. with Jennings in 1928, Sonneborn continued his research at Johns Hopkins on a National Research Council Fellowship through 1930. That same year, the Zoological Laboratory at Johns Hopkins secured funding from the Rockefeller Foundation. Jennings immediately launched new studies of the genetics of Paramecium, seeking to illuminate in a fully biological manner what he suspected were unique, and perhaps more primitive, laws of heredity in lower organisms, than those which had been previously demonstrated in higher plants and animals. Sonneborn began work as Jennings' research associate that summer, but carried out the Paramecium work largely on his own, since Jennings lacked the time to commit to the massive labors of the project, and completely abandoned the programme after a few years. Unlike Jennings, however, Sonneborn suspected that Mendelian laws applied equally to lower organisms as to higher organisms, and he set out to domesticate Paramecium for standard Mendelian analysis, aspiring to develop a model laboratory organism. The task took fully seven years to achieve and culminated with his 1937 discovery of mating types, which enabled for the first time routine control of the sexual reproduction of diverse types of Paramecium. Sonneborn's success was quickly appreciated throughout the biological community, and two years later, he moved to Indiana University where he built a flourishing research programme in protozoan genetics. There, Sonneborn attracted a large and vital group of graduate students and post-docs known as the "Paramecium workers," and his laboratory in Bloomington-referred to by some of his students as "mecca"-remained for the forty years the intellectual and institutional heart of ciliate genetics in the United States, and a major influence on genetic and developmental work around the world.

The experimental and theoretical products of Sonneborn and his Paramecium, however, were uniformly unorthodox in their exploration of mechanisms of gene action and cell differentiation, nucleo-cytoplasmic interaction, and cellular heredity. In his studies of the inheritance of mating type determination, kappa particles and plasmagenes, surface antigen inheritance, cortical inheritance, and speciation in microorganisms, Sonneborn repeatedly challenged geneticists and biologists to consider more holistic, interactionist accounts of developmental and hereditary processes and to reexamine dominant theoretical assumptions. Many of his most radical ideas were never published, however, but were expressed only in unpublished lectures, or were left largely unread in unpublished notes and manuscripts, bearing bold ideas signified by titles such as "Is DNA All?" The Sonneborn Papers are extremely valuable, then, in illuminating Sonneborn's articulation and defense of his experimental work, the contexts in which he worked, and the relative impact of his ideas on the mid-twentieth century biological community.

Although the Sonneborn papers remain unprocessed, their potential utility to historians seems so great as has been evidenced by considerable recent use of the collection—that this article seeks to provide an overview of their contents, their scope, and their approximate location, so as to enhance utilization of the papers until complete processing occurs. Under current circumstances, the dissertation that follows is intended only to provide a general, pragmatic, road map to aid navigation through a massive collection of papers which will inevitably be reorganized as they are processed and catalogued. The collection itself currently consists of two distinct parts: a set of twenty-seven mostly large, Hollinger boxes which contain materials that have been partially processed, and twenty-four file cabinet drawers, in which the contents are in the exact condition and level of organization as they were at the time of Sonneborn's death. Since each file cabinet drawer contains a volume of approximately two Hollinger boxes filled with documents, the fully unprocessed portion of the collection is nearly twice as large as that which has been semi-processed. The materials located in the boxes have not been assigned permanent numbers or other designations but are readily identifiable. The bulk of Sonneborn's correspondence is boxed and separated into two large collections, alphabetical and chronological correspondence. Sonneborn was intimately connected in the network that defined mid-twentieth century genetic and biological inquiry, as is illuminated by his vast correspondence with, among others, geneticists, microbial geneticists, protozoologists, and biochemists. The alphabetical correspondence constitutes four boxes, and includes an extensive correspondence with George Beadle, James Crow, Max Delbrück, Milisav Demerec, Boris and Harriet Ephrussi, Ian Gibson, Alexander Hollaender, Julian Huxley, Joshua Lederberg, Carl Lindegren, André Lwoff, Barbara McClintock, Ernst Mayr, Franz Moewus, Ruth Sager, Sol Spiegelman, Curt Stern, Sewall Wright, and many others. The chronological correspondence also
In addition, two small boxes, specifically labeled "Correspondence 1955-1962," and "Correspondence 1963-n.d.," include letters which accompany material found in three small boxes labeled "Experimental control of human evolution I," "Experimental control of human evolution 11, 111, and "A-M Reports: Biological effects National Research Council." All of these materials, together, illuminate two of Sonneborn's post-war eugenic endeavors with like-minded colleagues to promote and protect human heredity in the new atomic and molecular era. The box "A-M Reports: Biological effects National Research Council" contains minutes and draft reports for the National Academy of Sciences (NAS) Committee to Study the Biological Effects of Atomic Radiation (BEAR) which span the period during which Sonneborn served on this committee, 1955-1956. Sonneborn did not engage in radiation genetics research himself, or contribute directly to research on human heredity. Instead, as was typical for him, he created a well-defined role for himself on this committee as that of a non-specialist geneticist who ensured that the final report was understandable to its lay audience. Although the accompanying correspondence found in the box "Correspondence 1955-1962" is limited to Sonneborn's duration on the committee, it is nonetheless rich in exchanges among the committee members, and includes relevant unexchanged notes from telephone conversations and meetings. Additional correspondence regarding the NAS BEAR committee are currently found in the file drawer dedicated to the National Academy of Sciences (see discussion in file drawers, below); this drawer contains all other NAS correspondence and committee records.

Additional NAS committee documents are located in box "N-Z Reports: Natural Resources Tropical Medicine."

The remaining materials in "Correspondence 1955-1962," and "Correspondence 1963-n.d.," and the accompanying manuscripts found in the boxes on experimental control of human evolution, document Sonneborn's organization of a symposium in 1963 on the future evolutionary consequences of genetic engineering, and the creation of a subsequent volume on this issue which he edited. For this symposium, Sonneborn sought reflective, leading geneticists to offer their views and concerns on the prospects of applying the knowledge of microbial genetics to humans. The resulting correspondence between Sonneborn and the contributors, who included G. Pontecorvo, Salvador Luria, H. J. Muller, and Edward Tatum, constitutes a lively and rich discourse in one of the earliest efforts among geneticists to comprehend the new possibilities and dilemmas of genetic engineering.

An overview of the contents of the remaining boxes is as follows:

- **Biographical and photos.** One box. Contains numerous unpublished autobiographical accounts including the 78-page document, "My Intellectual History in Relation to my Contributions to Science," and "My 50 Years in Biology (Genetics);" an extensive correspondence entitled "Deliberations," in which Sonneborn deliberated but declined job offers from, among others, the University of California, Berkeley and the Carnegie Institute of Washington's Cold Spring Harbor in 1944, Stanford University and the Wistar Institute in 1947, Harvard University in 1949, and repeated solicitations from C. W. Metz at the University of Pennsylvania throughout the 1940s and 1950s; a sizable collection of photographs of Sonneborn, his students, and colleagues; newspaper clippings; documentation of awards received; and correspondence and documentation of Sonneborn's early years at Johns Hopkins University and his subsequent move to Indiana University.

- **Diaries, 1921-1980.** One box. Diaries contain extensive personal documentation of Sonneborn's career and personal life. Unfortunately they are very sketchy during his most influential years, between 1940 and about 1966.

- **Printed material by others regarding Sonneborn.** One box.

- **Lectures, meetings, symposia, 1930-n.d.** Four boxes. Contains a rich collection of unpublished lecture notes, symposia, and meeting materials, spanning his entire career.

- **Courses, lecture notes and exams, 1932-n.d.** Five boxes. Contains extensive notes ranging his entire teaching career for an array of classes in genetics, including his popular "Genetics and Society" course.

- **Genetics Society of America (GSA).** One box. Contains Sonneborn's 1949 presidential correspondence; exchanges among members of the GSA Committee to Counter Anti-Geneic Propaganda (including Sonneborn, Robert Cook, Theodosius Dobzhansky, H. J. Muller, and Bentley Glass) named by Sonneborn in 1949 to address the Lysenko controversy; the original copy of James Watson's well-known critique of Franz Moewus and Richard Kuhn's biochemical genetic work utilizing Chlamydomonas, which he wrote for one of Sonneborn's graduate seminars; a collection of correspondence accumulated by Sonneborn, reflexively entitled "Historical: Correspondence with Early Geneticists," which includes exchanges with Edgar Altenburg, George Beadle, Ernst Casparsi, and Theodosius Dobzhansky.

The contents of the filing cabinets are the most difficult to identify and utilize; much of this material, however, is richly informative of the history of protozoan genetics and the research empire built by Sonneborn. It must be noted again, though, that the current locations of these documents are undoubtedly not permanent, but the general thematic groupings utilized below will likely prevail, for at least some time yet, and should provide researchers an indication of the materials available.

- **Department and University Affairs.** Two drawers. Contains correspondence with Herman Wells, Fernandus Payne, Theodore Torrey, Marcus Rhoades, and H. J. Muller regarding the continued development of leading-edge biological research and education at Indiana University. This correspondence illuminates the unique and successful midwestern, state-supported context in which many outstanding biologists, including Robert Briggs, Alfred Kinsey, Salvador Luria, Muller, Rhoades, and Sonneborn flourished.
Eugenic Science in California:

The Sonneborn Papers—now located in the Lilly Library at Indiana University—represent a rich and extensive collection of materials that have been acquired over time by the library. Sonneborn's correspondence and research notebooks, but also include many of Sonneborn's manuscripts and personal reflections which were never published. The fact that so many of Sonneborn's ideas did not reach print—despite his esteemed status in the field of genetics—might, on the surface, make the documents described above seem of little historical interest. Instead, I believe, they prove richly reflective not only of the unique experimental research, theoretical ideas, and socio-scientific concerns of Tracy Sonneborn, but of the nature of the genetics community in which he enthusiastically worked. Indeed, the achievement of this collection lies not only its ability to convey a fascinating story about a singular geneticist, but also to clearly illuminate the dominant trends in the genetics community within and against which Sonneborn defined his own experimental investigations.

ENDNOTES

1. Department of History and Philosophy of Science, Goodbody Hall 130, Indiana University, Bloomington, IN 47405. I gratefully acknowledge the assistance of the Reading Room Staff at the Lilly Library who have pioneered with me through the endless drawers and filing cabinets containing the Tracy M. Sonneborn Papers. This project was supported by an Everett Heim Visiting Fellowship to the Lilly Library and a National Science Foundation Doctoral Dissertation Research Improvement Grant from the Science and Technology Studies Program.


As the above account suggests, the valuable resources in the Sonneborn Papers extend beyond the typical collection of correspondence and research notebooks, but also include many of Sonneborn's manuscripts and personal reflections which were never published. The fact that so many of Sonneborn's ideas did not reach print—despite his esteemed status in the field of genetics—might, on the surface, make the documents described above seem of little historical interest. Instead, I believe, they prove richly reflective not only of the unique experimental research, theoretical ideas, and socio-scientific concerns of Tracy Sonneborn, but of the nature of the genetics community in which he enthusiastically worked. Indeed, the achievement of this collection lies not only its ability to convey a fascinating story about a singular geneticist, but also to clearly illuminate the dominant trends in the genetics community within and against which Sonneborn defined his own experimental investigations.
The eugenics movement continues to be an active and controversial site for historical research. While the general outlines of the history of the eugenics movement in the U.S. and Britain have been well established during the past two decades by several major monographs, much work remains to be done. One recent trend, initiated by the work of Mark Adams, is the study of eugenics movements in various national or regional contexts. Comparative studies, as well as investigations of the links among various national movements, are also shedding new light on both the social and scientific underpinnings of eugenics. There are also calls for a reevaluation of aspects of the standard historical model of the development of the movement, which include both an effort to broaden the notion of "eugenics" under a more encompassing model of social control and a reconsideration of the pure hereditarian cast of efforts at eugenic reform.

While controversies over eugenics will continue to touch upon many significant issues regarding historical interpretation, the theory and practice of science, and standards of public and private morality, the grounding for debate on the historical development of eugenics must continue to be founded upon the historical record as it has been preserved. Even given the limitation of such records, as Lily Kay recently reminded us, new archival sources allow historians to "increase the level of thoughtfulness and sophistication" of their histories. A significant body of such material has recently become available at Caltech in the form of the E.S. Gosney/Human Betterment Foundation papers.

E. S. Gosney was the founder and President of the Human Betterment Foundation (HBF), a nonprofit organization chartered in 1929 with the intention "to foster and aid constructive and educational forces for the protection and betterment of the human family in body, mind, character, and citizenship." These theoretical goals were put into practice primarily through the distribution of literature on eugenic sterilization, particularly detailed case studies drawn from the sterilizations of those judged mentally defective under the California sterilization laws passed in 1909. During the period of its operation, the Foundation undertook research on the physiological, mental, and social effects of sterilization, and distributed informational pamphlets on eugenic sterilization and social hygiene. As one of the leading eugenic organizations in America, located in the state with the most aggressive eugenic program in the U.S., the papers of the Gosney foundation provide a unique source for exploring many aspects of the popularity and success of eugenics, both in the U.S. and around the world during the 1920s to the 1940s.

E. S. Gosney was born on a farm in Kenton County, Kentucky, in 1855. His father died when Gosney was nine, and four years later his mother moved the family to Texas. At 17, he left home and began working his way through college, eventually graduating from Richmond College, Missouri in 1877 and taking a law degree from the Saint Louis School of Law three years later. Gosney eventually settled in the territory of Arizona, an area just emerging from its "Old West" era. There, he set up a successful law practice in Flagstaff, and also became involved in the financing of a number of businesses, particularly in the sheep and cattle breeding industry. He organized the Arizona Wool Growers' Association to fight for the rights of small stock farmers, who faced elimination at the hand of land speculators and the railroad companies. As part of this battle he also fought for and eventually won the transfer of management of the U.S. Forest Reserve from the Department of the Interior to the Department of Agriculture.

Around 1905, Gosney began spending his winters in Pasadena and soon decided to relocate to Southern California, in part to provide a more civil environment for the education of his two daughters. He quickly became a leading member of the Pasadena business community, buying up citrus fields and real estate in the still sparsely populated San Gabriel valley, east of Los Angeles. In 1906, he became the principal financier and chairman of the board of trustees of the Polytechnic Elementary School, an institution dedicated to providing high quality elementary education. Gosney also became very active in the leadership of the California branch of the Boy Scouts of America.

While in Pasadena, Gosney became a close associate of Paul Popenoe, who was then serving as the director of the Institute of Family Relations in Los Angeles. The results of this work, entitled "Sterilization for Human Betterment," were published in 1929. In that same year, Gosney set up the HBF and gathered a membership of twenty-five leading scientists, philanthropists, and community leaders including Popenoe and Lewis Terman, David Starr Jordan, William B. Munro and Otis Castle.

During the next thirteen years, the HBF continued to carry out research on the effects of sterilization and undertook widespread distribution of "Sterilization for Human Betterment" to individuals, public libraries, and schools. During this period, ties between the HBF and its Pasadena neighbor, Caltech, also began to grow. Robert Millikan, who shared aspects of Gosney's vision for human progress and also had an eye for potential donors to Caltech, joined the board of the HBF in 1937. Shortly before Gosney's death in 1942, he also courted Thomas Hunt Morgan's support for his Foundation.

Lois Gosney Castle assumed the leadership of the Foundation upon her father's death. Together with the HBF's Board of Trustees, she decided to liquidate the assets of the Foundation and turn the proceeds over to Caltech. In 1943, an agreement was drawn up between the HBF and Caltech, wherein Caltech agreed to use the Foundation's assets to set up the Gosney research fund, which would be administered by the Division of Biology. This fellowship, intended to carry on the spirit of the Foundation's work for the betterment of the human condition, has been used to support postdoctoral research "in those branches of biological science basic to our understanding of human welfare."
The Gosney/Human Betterment Foundation records were recovered from the Institute's Waverly warehouse in 1968, where they apparently had been abandoned after the dissolution of the Foundation. Due to the existence of numerous personal medical records in the files, however, the collection remained closed to researchers due to legal concerns. When this issue was resolved recently, the collection began to be prepared for use by researchers. Work on the collection is ongoing, but the collection may be available to researchers who contact Caltech. Together, Popeneoe and Gosney began an extended study of the medical, legal, and social aspects of the sterilizations being carried out under the terms of the California Sterilization Laws at the Sonoma State Hospital and other state institutions. Archives and make prior arrangements to work with the papers. Currently, most of the files remain as they were left by Lois Gosney Castle in 1942. The collection is roughly divided into four categories:

I. Human Betterment Foundation--Records, Research and Personal Correspondence  
II. Correspondence Files--by Country and State  
III. Sterilization--Records and Case Histories  
IV. Printed Material--Journals, Reprints, Articles

The manuscript portions of the collection will provide researchers with important new insights into what has been widely accepted as a period of decline for eugenics in America, at least in terms of its scientific respectability. In particular, many details of Gosney's and Paul Popeneoe's research into the effects of human sterilization deserve more extensive investigation. The records in the Gosney collection, in addition, amply document the enduring popular appeal of eugenics, and also provide more insights into the international dimensions of eugenic thought.

Interesting manuscripts and letters from both Gosney and Popeneoe are present in significant number in the collection, including this condemnation of German eugenic theory by Gosney dated 9 September, 1940: "We have little in this country to consider in racial integrity. Germany is pushing that. We should steer clear of it lest we should be misunderstood." The timing of this statement, however, a year after the beginning of hostilities in Europe, must be considered in judging Gosney's view of the German eugenic movement, which he had been following closely with Popeneoe since the mid-1930s. On the other hand, there can be little question about Gosney's vehement anti-Catholicism, the group that represented one of the HBF's most vocal critics. These aspects of the HBF's agenda are just two of the many interesting issues waiting to be further explored in this collection.

Scholars wishing to consult the Gosney/Human Betterment Foundation papers or other collections at Caltech should write to the Archivist, California Institute of Technology, Mailcode 015A-74, Pasadena, CA 91125. Other information on the Archives holdings, including a large sample of the Caltech photo archives can be found on the World Wide Web at http://www.caltech.edu/archives/ or via e-mail at archives@caltech.edu or fax (818)-397-8756.

APS Mellon Resident Fellowships  

The American Philosophical Society Library is accepting applications for short-term residential fellowships for conducting research in its collections. The Society's Library, located near Independence Hall in Philadelphia, is a leading international center for research in the history of American science and technology and their European roots, as well as early American history and culture. The Library houses over 6.5 million manuscripts, 190,000 volumes and bound periodicals, and thousands of maps and prints. Outstanding historical collections and subject areas include the papers of Benjamin Franklin; the American Revolution; 18th and 19th-century natural history; western scientific expeditions and travel; the Peale-Sellers papers; American Indian languages; anthropology; the papers of Charles Darwin and his forerunners, colleagues, critics, and successors; genetics and eugenics; biochemistry, physiology, and biophysics; 20th-century medical research; and modern physics. (The Library does not hold materials on philosophy in the modern sense.) The fellowships, funded by The Andrew W. Mellon Foundation, are intended to encourage research in the Library's collections by scholars who reside beyond a 75-mile radius of Philadelphia. The fellowships are open to both U.S. citizens and foreign nationals who are holders of the Ph.D. or the equivalent, Ph.D. candidates who have passed their preliminary exams, and independent scholars. Applicants in any relevant field of scholarship may apply. The stipend is $1,900 per month, and the term of the fellowship is a minimum of one month and a maximum of three, taken between June 1, 1996 and May 31, 1997 (for '96-'97); or June 1, 1997 and May 31, 1998 (for '97-'98). Fellows are expected to be in residence for four consecutive weeks during the period of their award.

There is no special application form and this notice provides all the essential information needed to apply. Applicants should submit the following: (1) cover sheet stating a) name, b) title of project, c) expected period of residence, d) institutional affiliation, e) mailing address, f) telephone numbers, and g) social security number; (2) a letter (not to exceed three single-spaced pages) which briefly describes the project and how it relates to existing scholarship, states the specific relevance of the American Philosophical Society's collections to the project, and indicates expected results of the research (such as publications); (3) a C.V. or résumé; and (4) one letter of reference (doctoral candidates must use their dissertation advisor). Published guides to the Society's collections are available in most research libraries, and a list of these guides is available on request. Applicants are strongly encouraged to consult the Library staff by mail or phone regarding the collections.

Address applications or inquiries to: Mellon Fellowships, American Philosophical Society Library, 105 South Fifth St., Philadelphia, PA
MBL/WHOI LIBRARY SPECIAL COLLECTIONS

by

Garland E. Allen
Washington University

Descriptions of the various resources available to historians of science at the joint Marine Biological Laboratory (MBL) Woods Hole Oceanographic Institute (WHOI) library in Woods Hole, Massachusetts have appeared in three previous issues of The Mendel Newsletter: an account of the entire library [No 2, 1968], a description of the Frank R. Lillie, and the Charles Otis Whitman Papers [No. 9, 1973; No 13, 1977, respectively], and an overview of the archives prepared by then volunteer-archivist Ruth Davis. Since the joint MBL-WHOI Library has undergone extensive reorganization in the last several years, a further update for old-timers and an introduction for younger scholars seems in order.

Founded in 1888 by Charles Otis Whitman (1842-1910) the MBL has remained for over a century a mecca for biologists to carry out research in general physiology, neurobiology, developmental biology, genetics, marine ecology, parasitology and molecular evolution (to name only a few). Increasingly, in recent years, historians of biology have also been making use of the MBL as a site for courses and seminars, as well as a place to pursue their own research. There are a number of reasons why the MBL has proved attractive in this regard. Most center around the library and its outstanding and unique collection.

Of particular interest for work in the history of (largely) twentieth-century biology are the library’s journal and archival collections. Most journal runs are complete, and the vast majority are housed in a single building that is card-accessible 24-hours a day, 365 days a year (open access weekdays from 8:00 AM to 4:30 PM). Journal holdings run from the prominent (American Naturalist) to the obscure (The Mendel Journal, or the Memoirs of the St. Petersburg Academy of Science). The library also contains a number of standard journals in the history of science and medicine that will be of value to historians and philosophers of science (Isis, Osiris, Journal of the History of Ideas, Bulletin of the History of Medicine and Allied Sciences Journal of the History of Medicine Mendel Newsletter, History of Oceanography, History and Philosophy of the Life Sciences, Journal of the History of Biology among others). In addition, historian of Russian science Mark Adams reports that the MBL-WHOI has the only holdings in this country of many rare Russian journals or reports.

The Archive or Special Collections area of the library has received increasing attention in recent years, largely due to the efforts of a group of devoted volunteers. The Special Collections houses a number of different kinds of materials of interest to historians. One of the most valuable and extensive is a reprint collection arranged by author, dating from the 1860's through the late 1960's (when the institution stopped taking reprints). The reprints are catalogued and stored in acid-free boxes; for many of the more prominent biologists who worked at MBL (e.g., Frank R. Lillie, Edmund Beecher Wilson, Ross G. Harrison, Thomas Hunt Morgan, Selig Hecht or George H. Parker) collections are 100% complete. Such a collection is invaluable when studying an individual or a small school of workers.

Although not nearly as complete as its journal collection, the library’s book collection is important because of its specialized character. A number of important old and/or rare books are housed in a climate-controlled area (which also houses the reprints), including original sets of Cuvier, Gesner, Agassiz, and Darwin. An extensive collection of the reports issued by various scientific expeditions from the late eighteenth through the twentieth centuries, as well as published individual accounts and secondary works about such voyages gives this material singular importance for historians of science. Secondary sources in the history of science/biology are still somewhat spotty, but they are improving.

Among the significant archival materials are the personal papers of various scientists prominent at the MBL from 1888 to the present. Included among these are the papers of Charles Otis Whitman (founder and first Director), Frank R. Lillie (Whitman’s successor as Director and also one of the founders of WHOI), Alfred Huettner, Ida Hyde, Lester and Lucina Barth, and Alpheaus Hyatt. The library is beginning to formulate plans to acquire the personal papers of other prominent biologists who worked regularly at the MBL over the years. Since embryology was a major research focus at MBL from the outset, it seems reasonable to concentrate, though not be limited to, developmental biologists. Such a collection would thus be complementary to that in history of genetics at the American Philosophical Society.

A particularly unique resource in the Special Collections is an extensive photo and a less-extensive motion picture collection. Photos are mostly of individuals, usually in a Woods Hole setting, and include all MBL summer classes from 1888 onward. There are also many photos of groups on field or collecting trips, a number showing Louis Agassiz's Anderson School on Penikese Island (off the coast of Woods Hole), views inside laboratories, the old mess hall, at the beach, etc. Photos of a number of other marine research stations are also available. The photo collection is catalogued and on-line, so that it is possible to check out any figure and in a moment obtain a list of all the photographs in which that individual appears (most of this work has been carried out over the years by volunteers, especially Robert and Mildred Huettner). The photo collection is supplemented by two file drawers of biographical information, both published and unpublished, on people who worked at, or figured prominently in the history of, the MBL.

The motion picture collection consists of numerous short (usually 10-minute or less) film clips of processes such as mitosis, cleavage in sea-urchin embryos, response of nerve cells to nerve growth factor, development of zebra fish eggs and the like, for the most part taken
by investigators at the MBL (these are not commercial films).

For those interested in institutional history, there are a number of boxes of financial records, reports of the Boards of Trustees and their various sub-committees, library records and correspondence from the very early years, reports of outside review committees established by the Board from the 1930's onward, published Trustees' Reports from 1888-present, and minutes of the annual corporation meeting (the corporation of MBL consists of the working scientists, along with other benefactors who join and pay an annual membership fee).

Anyone interested in working in the MBLWHOI Library Special Collections should write to Cathy Norton, Head Librarian, at the MBL, Woods Hole, MA 02543 (Phone 508-548-3705; e-mail cnorton@mbl.edu).

Garland E. Allen
Biology Department
Washington University
St. Louis, MO 63130

GENETICS COLLECTIONS NOW AVAILABLE FOR RESEARCH AT THE A.P.S. LIBRARY

by
Miriam Spectre
American Philosophical Society

Three manuscript collections relating to the history of genetics (the Salvador E. Luria Papers, the Erwin Chargaff Papers, and the Thomas F. Anderson Papers) have recently been processed by Miriam Spectre at the American Philosophical Society. A fourth collection (the Bruce Wallace Papers) is currently being processed by Timothy Wilson. These collections are available for research use.

These four collections cover the subjects of molecular biology (Luria), biochemistry (Chargaff), biophysics and electron microscopy (Anderson), and population dynamics and speciation in *Drosophila* (Wallace). Notable correspondents are listed in the description of each collection.

**Salvador E. Luria Papers**

The Salvador E. Luria Papers (1923-1992) document the career of a bacteriologist and molecular biologist whose work with Max Delbrück on bacteriophage demonstrated that bacteria resistant to certain phages arose through gene mutations. Luria's later work showed that phages also mutate genetically. Luria received the Nobel Prize in Physiology or Medicine in 1969 with Max Delbrück and Alfred D. Hershey. Luria's papers also document his strong political views. The collection is arranged in eight series.

Series I, Correspondence (1938-1992), contains letters about research on viral genetics; conferences; and political issues. There is a substantial amount of correspondence concerning Luria's affiliation with the Salk Institute for Biological Studies. Correspondents include Thomas F. Anderson, Ernest Borek, Noam Chomsky, Seymour S. Cohen, Max Delbrück, Alfred D. Hershey, François Jacob, Jacques Monod, and Linus Pauling.

Series IIa, Subject Files (1938-1990), contains newspaper and magazine clippings; reports; reviews of Luria's books; and meeting minutes. There is a statement that Luria made about being blacklisted by the National Institutes of Health; material about Luria's involvement with the Boston Area Faculty Group on Public Issues (BAFGOP) and about his political actions concerning Central America, Vietnam, civil defense, nuclear power, and nuclear arms.

Series IIb, Personal Material (1923-1991), contains various items of a personal nature, including condolence letters sent to Luria's wife after his death; letters in Italian from Luria's brother and father in Italy; poems that Luria wrote; financial materials; Luria's naturalization certificate; and World War II letters in Italian from a girlfriend in Italy before he met his wife.

Series III, Works by Luria (1938-1987), contains reviews of colleagues' books; notes and drafts for the books *General Virology and Life: The Unfinished Experiment*; and notes and drafts for lectures, including the Nobel lecture, "Phage, Colicins, and Macroregulatory Phenomena."

Series IV, Works by Others (1944-1990), contains articles, notes, reports, and papers written by colleagues and 'students of Luria, including Max Delbrück, Renato Dulbecco, François Jacob, and James D. Watson (Luria was one of Watson's dissertation advisors).

Series V, Research Notes and Notebooks (1941-1979), contains loose notes and notebooks on the subjects of bacteria, colicins, microdermatology, phage, salmonella, shigella coli, and viruses.

Series VI, Course Material (1931-1991), contains lecture notes, exam and quiz questions, problem sets, lists of students registered for Luria's courses, grade books, handouts, instructions for experiments, and reading lists. Course subjects include bacterial viruses, biochemistry, biophysics, freshman seminar, general biology, general microbiology, and microbial physiology. Series VII, Photographs
and Negatives (1957-1982), contains prints and negatives of illustrations for articles and of Luria himself.

**Erwin Chargaff Papers**

The Erwin Chargaff Papers (1929-1992) document the career of a biochemist who discovered the base-pairing regularities or "complementarity relationships" in deoxyribonucleic acid (DNA). Chargaff also disproved the tetranucleotide hypothesis; demonstrated the existence of a large number of different DNA species; and created the first descriptions of hypochromicity, hyperchromicity, and the denaturation of a DNA. The collection is arranged in seven series.

Series I, Correspondence (1931-1992), contains letters about research on nucleic acids, recombinant DNA, denaturation of DNA, and blood clotting. There is a substantial amount of correspondence regarding the administration of Chargaff's research laboratories at Columbia University and at Roosevelt Hospital, his work as editor for the journal, *Biochimica et Biophysica Acta* and his affiliations with many scientific organizations, such as the National Academy of Sciences and the American Chemical Society. Correspondents include Rudolph J. Anderson, Waldo E. Cohn, Edgar Lederer, and Severo Ochoa.

Series IIa, Grants (1930-1982), contains applications, reports, correspondence, and expenditure statements for various agencies (including the American Cancer Society, the Office of Scientific Research and Development, and the United States Public Health Service) that granted Chargaff research money for his laboratories at Columbia University and at Roosevelt Hospital.

Series IIb, Subject Files (1940-1984), contains programs, brochures, newspaper and magazine clippings (including some reviews of Chargaff's books), reports, and meeting minutes.

Series III, Works by Chargaff (19291989), contains Chargaff's typewritten and handwritten outlines, preparatory notes, research, and drafts for articles, books, reviews, lectures, and tributes to colleagues. Also included for some works are galley proofs. Many of the works are co-authored with students and colleagues.

Series IV, Works by Others (1936-1985), contains articles, notes, and papers written by colleagues and students of Chargaff, including Waldo E. Cohn, David Elson, John N. Hawthorne, and John D. Karkas.

Series V, Research Notes & Notebooks (1929-1951) contains loose notes and notebooks that include the subjects of nucleoproteins, blood coagulation, and phosphatides.

Series VI, Photographs & Negatives (1935-1977), contains prints, negatives, and slides. The majority of the prints are graphs and charts from articles about biochemistry, many from the journal, *Biochimica et Biophysica Acta* There are some prints of Chargaff giving lectures and receiving awards.

**Thomas F. Anderson Papers**

The Thomas F. Anderson Papers (1928-1989) document the career of a biophysicist and electron microscopist whose research included raman spectroscopy; physiology of yeast; the biological effects of radiation; the biological applications of electron microscopy; and the genetics of bacteria, bacterial viruses, and bacteriophage. Anderson was a Professor of Biophysics at the University of Pennsylvania and a Senior Member of the Institute for Cancer Research in Fox Chase. The collection is arranged in seven series.

Series I, Correspondence (1932-1989), contains letters about biological electron microscopy; research on bacterial viruses; conferences; the publishing of journal articles; and participation in professional societies. There is correspondence about Anderson's affiliations with the Biophysical Society, Electron Microscope Society of America, and the Philadelphia Electron Microscope Society. There is also correspondence concerning his work at RCA Laboratories, the University of Pennsylvania, and The Institute for Cancer Research. Correspondents include Britton Chance, Max Delbrück, Alfred D. Hershey, François Jacob, Raymond Latarjet, Salvador E. Luria, André Lwoff, Jacques Monod, and Elie Wollman.

Series II, Subject Files (1928-1989), contains calendars/daybooks for almost every year from 1941 to 1989 that contain Anderson's brief notes; letters written by colleagues and publishers asking for Anderson's permission to publish electron micrographs taken by him; a guest register used in 1942 and in 1949 at the Marine Biological Laboratory in Woods Hole, Massachusetts; and meeting minutes, agenda, and reports for the Biophysical Society.

Series III, Grant Files (1940-1983), contains applications, reports, correspondence, and expenditure statements for various agencies (including the United States Office of Naval Research, the National Cancer Institute, the National Science Foundation, and the United States Atomic Energy Commission) that granted Anderson research money for his laboratories at the University of Pennsylvania's Johnson Foundation and at The Institute for Cancer Research. There are two folders of material about the National Research Council's RCA Fellowship that Anderson received in 1940. Also in this series are reviews of other people's grant applications that Anderson wrote for various agencies.

Series IV, Works by Anderson (1934-1985), contains Anderson's typewritten and handwritten outlines, preparatory notes, research, graphs and figures, drafts, and some galley proofs for articles. There are some notes for lectures, as well as several reviews of books.
Some of the works are co-authored with colleagues and students.

Series V, Works by Others (1933-1988), contains articles, notes, reports, and abstracts written by colleagues and students of Anderson, including Helen Gay, François Jacob, Andrzej W. Kozinski, Jonathan T. Ou, and Lee D. Simon.

Series VI, Research Notes & Notebooks (1931-1977), contains loose notes and notebooks that include experimental notes; notes taken by Anderson at Cold Spring Harbor and at other symposia; and course notes from Anderson's studies at California Institute of Technology.

Series VII, Photographs & Negatives (1938-1988), contains prints and negatives of electron micrographs that Anderson took of viruses and *Drosophila*, among other specimens. Some of the micrographs were used for articles, while others are unpublished. There are also a few photographs of Anderson and his colleagues.

Bruce Wallace Papers

The Bruce Wallace Papers (1961-1991) document the career of a geneticist whose research centers on population dynamics and speciation of *Drosophila*. The papers date from his employment at Cornell University as Associate Professor of Genetics (1958-1961), Professor of Genetics (1961-1981), and finally Professor of Biology (1981-1982). Wallace became Distinguished Professor at Virginia Polytechnic Institute and State University in 1983.

During this period, he maintained memberships in several societies including the National Academy of Sciences, American Academy of Arts and Sciences, and the American Association for the Advancement of Science. He served in various capacities for the following societies: American Society of Naturalists (secretary, 1956-1958; president, 1970), Genetics Society of America (secretary, 1968-1970; president, 1974), Society for the Study of Evolution (president, 1974), and the American Genetics Association (president, 1990). The Papers (10.5 linear feet) are currently being processed. They are tentatively organized into five series: correspondence; subject files; works by Wallace; works by others; photographs. Correspondence accounts for over ninety percent of the papers. The subjects of the letters include *Drosophila* stocks, research techniques, critiques of manuscripts, med-fly research, Cornell's Genetics Department, U.S. Atomic Energy Agency grants, and his research trips to the Azores, Greece and Holland. Correspondents include John Beardmore, James Crow, Theodosius Dobzhansky, Costas Krimbas, I. Michael Lerner, Barbara McClintock, H.J. Muller, and James V. Neel.

Selected Parents Will Have Better Children!

by

Beth Carroll-Horrocks

*American Philosophical Society*

When the American Eugenics Society presented its archives to the American Philosophical Society in 1972 it was fully aware of the APS's strong holdings in 20th-century life sciences and how well the AES records complemented those holdings. It probably had no idea that the AES archives would become one of our most often-consulted collections. The donation was negotiated by AES Treasurer Frederick Osborn, whose own papers arrived at the APS in 1983; others on the AES Board of Directors included President Theodosius Dobzhansky (papers to APS, 1976), Richard Lewontin (papers to APS, 1980), and H. Bentley Glass, whose guide to the APS genetics collections has brought many researchers to the Library.

Within months of the archives' deposit came a related gift from Leon F. Whitney, a veterinarian, biologist, and long-time AES Executive Secretary: an album of photographs from the 1920s and 1930s which illustrates in pictures the people and activities of the AES during those years. The album contains just under one hundred photographs, a few of them portraits of guinea pigs used to demonstrate "Color Inheritance... The Six Mendelian Possibilities," but most of them much more interesting. Some examples of photographs taken at Fitter Family contests in Kansas and Texas are illustrated on these pages.

Researchers interested in visiting the Library to see the album in person may contact the APS Manuscripts Department at 215-440-3409, or via e-mail at manuscripts@amphilsoc.org.

The Royal Society and the Philosophical Transactions are associated with deep changes in where social and intellectual authority resides, the means by which authoritative knowledge emerges and is asserted, and intellectual authority's relationship to the state, church, and other centers of authority and power. However, the story that has emerged through these multiple arenas of inquiry is not simple or simply progressive. I would like to thank them all for their interest and efforts. Thus, although I do describe the evolution of experimental reports in this study, I do not focus exclusively on this form of discourse. As a result, a more fully representative range of research writing becomes available for treatment. Data Collection Activities by Five Approaches 120 Table 7.2. Typology of Sampling Strategies in Qualitative Inquiry 127 Table 8.1. General Data Analysis Strategies, by Authors 149 Table 8.2. Thus, for each of the approaches discussed in this book, I now reflect on interpretive elements of procedures. These interpretive aspects also inform how I
view the basic design of qualitative research found in Chapter 3. In addition, I brought up to the front of the book the philosophical and theoretical discussion (Chapter 2) so that it can help frame all other discussions about qualitative research. Some have argued that the purpose of qualitative research should be to advance a social justice agenda (Denzin & Lincoln, 2005). Among the Royal Society’s many and varied contributions to the development of modern science, one of the most lastingly important was quietly announced in an ordinary meeting in February 1665. The first publication of the Philosophical Transactions, whose 350th anniversary the Society is celebrating throughout this year, had a range of implications as staggering as many of the world-altering papers that would later appear in its pages by Robert Boyle, Isaac Newton, Gottfried Leibniz, Christiaan Huygens, Edmond Halley, Benjamin Franklin, Henry Cavendish, William and Caroline Herschel, Humphry...Transactions, and Proceedings, continued to cost the Society money. In quantitative studies, researchers advance the relationship among variables and pose this in terms of questions or hypotheses. Being objective is an essential aspect of competent inquiry; researchers must examine methods and conclusions for bias. The researcher not only selects a qualitative, quantitative, or mixed methods study to conduct; the inquirer also decides on a type of study. Offers short essays on social and philosophical subjects. Includes a reference library and ‘Bon Mot’ selection of quotes. Edited by Tim Ruggiero. The life of Man, viewed outwardly, is but a small thing in comparison with the forces of Nature, wrote Bertrand Russell in this influential essay. The slave is doomed to worship Time and Fate and Death, because they are greater than anything he finds in himself, and because all his thoughts are of things which they devour. But, great as they are, to think of them greatly, to feel their passionless splendor, is greater still. And such thought makes us free men.