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THE OTTERBEIN MISCELLANY

SERENDIPITY IN SCIENTIFIC DISCOVERY

Philip E. Barnhart

WILLIAM FAULKNER'S WILDERNESS SAINT

William T. Hamilton

WAR AS AN INSTRUMENT OF NATIONAL POLICY

James E. Winkates

FOREWORD

The *Otterbein Miscellany* is published once or twice a year as an outlet for faculty writing on a wide variety of topics. The college underwrites this publication in the belief that it will help maintain a genuine community of scholars. Papers are accepted, therefore, on the basis of their interest to the whole academic community rather than to members of a particular discipline. Editorial responsibility rests with a committee of the faculty.

Contributions are considered from the Otterbein College faculty and administration, active and emeritus — others on invitation only.

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SCIENCE IN THE BEST TRADITION

Under date of August 4, 1890, John Haywood, Professor of Mathematics and Natural Science at Otterbein since 1851, presented what must have been a treasured volume to the "Historical Society of Otterbein University." It was a 119-year-old, leather-bound copy of the *Transactions of the American Philosophical Society Held at Philadelphia for Promoting Useful Knowledge*, Volume I, January 1, 1769, to January 1, 1771, printed by William and Thomas Bradford at the London Coffee-House and published in Philadelphia. The Society's first president was Benjamin Franklin. Professor Haywood's gift now rests in the "Otterbein Room" rare book collection.

These *Transactions* record the famous beginnings of organized scientific investigation in America. It was a proposal circulated by Franklin himself that had brought together in 1769 the distinguished gentlemen from the several colonies, who had proceeded to unite under a plan which they "adopted from the Rules of that illustrious Body the Royal Society of London, whose example the American Philosophical Society think it an honor to follow, in their endeavors for enlarging the Sphere of Knowledge and the useful Arts." This Society, so it turned out, became the direct-line ancestor of the American Association for the Advancement of Science two hundred years later.

Professor Haywood's copy had been presented to him, says its inscription, "By his ardent admirer and former pupil J. N. Strasburg, Dayton, O., June 4, 1879." Strasburg of the class of 1865 was himself now launched on a successful teaching career, first as a professor of mathematics at Lane University, later at Lebanon Valley, and now as public school educator in Indiana and Illinois. Had the thought occurred to him, one wonders, that just as Dr. Franklin had brought together the first permanent association of American scientists, so had Professor Haywood, with his broad-ranging interests in mathematics, physical and natural sciences, and astronomy, laid the foundations for the related curricula that were rapidly developing at Otterbein? By presenting him with the historic *Transactions* of 1769-1771, Strasburg was symbolically allying his revered mentor and his alma mater with the main traditions of organized science in America and in Europe.

With these reminders of a distinguished past, the *Miscellany* is happy to pay its respects to Otterbein's various science disciplines in this year of new and handsomely expanded building facilities. Professor Haywood and his book recall an inspiring heritage and argue a rewarding future. Since John Haywood throughout his long professional career was not only an educator and a scientific investigator but a prolific writer, the *Miscellany* of 1970 is proud to present a number of papers from his colleagues of another generation. Like the gentlemen who wrote the reports in the *Transactions* of two centuries ago, Professor Haywood believed that the highest level of investigation and instruction sooner or later demands the power and the willingness to communicate effectively in print. To that obligation, the *Miscellany* is also earnestly dedicated.

The Editor

The first part of the book deals with the early years of the nation, from the time of the first settlers to the end of the Revolutionary War. It covers the period of the early colonial period, the struggle for independence, and the formation of the new government.

The second part of the book deals with the period of the early republic, from the end of the Revolutionary War to the beginning of the Civil War. It covers the period of the early republic, the struggle for a stronger central government, and the expansion of the nation.

The third part of the book deals with the period of the Civil War and Reconstruction, from the beginning of the Civil War to the end of Reconstruction. It covers the period of the Civil War, the Reconstruction era, and the struggle for civil rights.

The fourth part of the book deals with the period of the late republic, from the end of Reconstruction to the present. It covers the period of the late republic, the Gilded Age, the Progressive Era, and the modern era.

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SERENDIPITY IN SCIENTIFIC DISCOVERY

The product of scientific investigation is discovery. Discoveries of facts, of relationships, or of new and improved concepts regarding the world in which we live have always marked the most fruitful epochs in the growth of science. Science may be considered, then, that activity which enhances the probability of discovery. On the other hand, the work that consumes most of the scientific community's time and effort — *i.e.*, seeking applications for the fruits of scientific investigations — should be recognized only as technology, something that, as such, adds little to scientific discovery.

Ancient philosophers made discoveries about their world, but, being strongly influenced by presuppositions regarding the "best forms" of natural law, they were unable to apply these discoveries in a systematic way so as to establish revised or innovative hypotheses about the behavior of nature. Nor did they use them to evaluate what exists. Georgio de Santillana has correctly pointed out that the refusal to do either in any age constitutes ". . . a denial of straight scientific intuition."¹

Science came of age when it recognized in the sixteenth and seventeenth centuries that we learn most effectively about the world by attacking small regions of our environment about which we know something, or about which we can learn through specific, sharply defined experiments. We may never realize the grand, sweeping, unified theories the ancients attempted, but the body of knowledge we possess and have learned how to employ continues to grow because we can assume more precisely the limits of what may be known. Every new discovery pushes back previously imposed limits.

Can a *logic of discovery* be evolved or a *method* be defined that will in some way insure success? Obviously, any guides of the sort would be invaluable, and our explorers of thought processes have made some effort toward finding them. Most investigators, however, conclude, as does Taton in his *Reason and Chance in Scientific Discovery*, that ". . . only by heeding *all the many factors that influence the work of scientific creation*, can the collective organization of scientific research lead to the harmonious and fruitful development of science as a whole."²

To put it another way, there is no single route to discovery. The searcher must apply available practices or even invent new ones to wrest the secrets of the unknown from the grasp of a jealous universe.

Whether applying either old or new practices, however, scientists in all ages have had the momentous experience of encountering significant discoveries in totally unexpected places and in highly unusual ways. Such discoveries have been attributed to a phenomenon called "serendipity." It is a delightfully descriptive term. Just what it means and what its significance is are questions that deserve some careful examination.

Currently, the word *serendipity* is difficult to find in small dictionaries and is given differing meanings in large ones. It was coined by Horace Walpole, eighteenth century publisher and writer, who found the basis for it in a seventeenth-century fantasy by the Italian Christofory Armeno, entitled "The Three Princes of Serendip." Serendip was the former name of Ceylon. The heroes of the tale went on a quest for one hundred magical lines of verse that contained the secret of a potent fluid which would kill all sea monsters. Though they found only scattered fragments of the magic formula, they made many valuable, unexpected discoveries along the way simply because they were looking for something.

Walpole considered *serendipity* to be "making discoveries, by accident and sagacity, of things which they (the princes of Serendip) were not in quest of."³ Modern dictionary definitions tend to emphasize the element of accident in Walpole's description. The *Shorter Oxford English Dictionary* offers the definition, "The faculty of making happy and unexpected discoveries by accident." The *Random House Dictionary* differs only by replacing "happy and unexpected" with "desirable."

The importance of Armeno's fantasy and of Walpole's definition of "serendipity" lies not in the almost parenthetical idea of *accident*, but rather in making *discoveries*. . . of things not objects of their quest. Had the princes not been seeking something, relying upon pure accident to yield the many desirable results, their travels would have proven nearly useless insofar as the gaining of desirable new things was concerned. The vital feature of the situation recognized by Walpole was that they made

the discoveries as a result of their concerted quest for the magic formula.

For purposes of examining examples of scientific discovery, a slightly restricted redefinition of "serendipity" (with ever so slight apology to Horace Walpole) may be appropriate. Let us consider *serendipity* as the faculty to discover things for which one is not in quest. This definition includes the central idea of Walpole's statement without leaving out the possibility of accidental discovery. Furthermore it comes much closer to the point of the original story than any of the dictionary definitions.

A search through any random list of scientific discoveries will turn up a number with the distinction of being attributable to what has just been called *serendipity*. From astronomy such a list yields, among others, the following:

1675. The Danish astronomer, Olaus Roemer, undertook to record carefully the orbital motions of Jupiter's inner satellite in order to use a suggestion made by Galileo that by so doing one might measure accurately the longitude of a location on the surface of the earth. The significant result of this work, however, was not a determination of the longitude of an observatory but the first measurement of the velocity of light!⁴

1800. Sir William Herschel set out to measure the spectral energy distribution of sunlight and quite dramatically discovered the infrared region of the electromagnetic spectrum.⁵

1826. Heinrich Schwabe conducted a search for an intra-Mercurial planet by watching for the expected projection of the planet on the solar surface. Instead he discovered the quasi-periodic sunspot cycle.⁶

1903. Herbert H. Turner, while making photographs for the great Astrographic Catalog (an international effort to photographically map the entire sky to a relatively faint magnitude) attempted to rephotograph one small area of the sky which had been missed because of a defective batch of film. He *accidentally* mispointed the telescope and recorded an area for which there already existed a good plate. Upon comparing the two plates of the same region of the sky taken at different times he serendi-

pitously discovered a nova (a star which flares up in brightness by a factor of nearly ten thousand).⁷

1928. Edwin Hubble announced the Red Shift-Distance Relation, probably the outstanding phenomenon of modern cosmology. Apparently the first indication of this effect appears in a straightforward attempt to measure the solar motion with respect to the system of the little-understood "nebulae" which turned out to be the galaxies comprising the visible building blocks of the universe. It was certainly an unexpected and unsought observational discovery.⁸

1930. Robert Trumpler in attempting to utilize the apparent diameters of open star clusters as distance indicators discovered the general absorption of starlight by the interstellar medium.⁹

1932. In a program to identify the sources of radio noise (static, usually found associated with distant thunderstorms) Karl Jansky detected, quite unexpectedly, radio emission from deep space. Thus opened the new field of scientific investigation, Radio Astronomy.¹⁰

1965. While testing a new microwave system for communications purposes, Penzias and Wilson at the Bell Laboratories, Holmdel, New Jersey, discovered an isotropic background radiation characteristic of a general cosmic radiation field corresponding to a temperature of 3° Kelvin, which is perhaps the radiative remnant of a singularity in our universe that can be described in terms of the "origin" of our universe. This discovery has great cosmological implication.¹¹

And so the list grows. Although the above isolated examples are all drawn from observational astronomy, similar lists can be derived from other fields.

In an attempt to try to reconcile the idea of serendipity to a more general applicability in science we may examine its presence in two areas of systematic discovery described by Taton: (1) associated discoveries and (2) chain discoveries.¹²

(1) *Serendipity in Associated Discoveries.* When a scientist discovers an original method or concept never before used, many

workers eagerly grasp the new "tool" expecting fully to make many more findings by working the virgin territories opened. A prime example was the introduction by Newton and Leibniz of the differential calculus. The many fruitful discoveries in mechanics alone speak well of the reliability of associating one's self with a good new technique.

A quite analogous "flurry" of discoveries grew out of a particular problem associated with the cosmological models presented by Claudius Ptolemaeus, or Ptolemy, (2nd century A.D.) and Nicolaus Copernicus (1473-1543). One of the foremost reasons put forth by Ptolemy for adopting a geocentric world system was the inability to observe the parallax (*i.e.*, the change in direction of view) of the fixed stars required in a universe in which the earth moves. Indeed when Copernicus proposed a heliocentric system neither he nor his early followers could counter this very telling argument. From the year 1543, when Copernicus' *De Revolutionibus Orbium Coelestium* was published, the parallax problem became a major cause for the observational astronomers. Generally their quest was in vain, for it was not until nearly three hundred years later (1838) that Friedrich Wilhelm Bessel succeeded in measuring the first stellar parallax.

The following discoveries, fitting the definition of "serendipity" set out above, can be considered as "associated discoveries" because all grew out of attempts by astronomers to measure the elusive parallax of the stars demanded by a heliocentric world picture.

In 1726 James Bradley (who became in 1742 the 3rd Astronomer Royal of England), while searching for parallax effects, made two discoveries for which he was not looking. Bradley reasoned that certain stars when observed at different times of the year would reflect a component of their parallactic motion in a north-south direction along the meridian. He therefore had constructed a telescope which was so mounted that it could be used to measure quite accurately the angle between a star crossing the meridian and the zenith (the zenith being the point on the sky straight up from the observer). This instrument was capable in Bradley's estimation of detecting variations of the zenith distance of a star of from 1 to 2 seconds of arc.¹³ This accuracy is now recognized to be insufficient for the purpose of parallax measurement, as the largest parallax angle known is that of

Alpha Centauri, a star not available to Bradley's telescope, only 0.76 seconds of arc.

Nevertheless, Bradley observed the star *Gamma Draconis* over a period of months and recorded a variation in zenith distance of nearly 40 seconds of arc! He noted that this deflection of the star was in a different direction from that which would have been expected if it had been a parallax angle. After puzzling over this result for some time, Bradley announced that he had in fact measured for starlight an effect now called "aberration" due to the combined effect of the earth's orbital velocity and the finite velocity of light. The same phenomenon is observed while driving or walking in a downpour of rain. If the rain is falling vertically, it appears to the moving observer as if it were falling on a slant toward the observer from the direction toward which he is moving. The faster he is moving the greater is the apparent angle of fall from the vertical. Bradley's discovery confirmed the interpretation of the variations in the period of Jupiter's moons given in 1675 by Roemer. Incidentally, it also argued for the orbital motion of the earth just as strongly as would the detection of the parallactic motion of the star.

During the processing of the same data used to discover aberration of starlight, Bradley discovered another unknown effect — nutation of the earth's axis. This is a cyclic variation impressed upon the normal precessional motion of the earth's rotational axis. Nutation is produced as a result of the 5° inclination of the moon's orbit to the plane of the earth's orbit combined with the moon's gravitational effect, tending to pull the earth's equatorial bulge into the plane of the moon's orbit. Though not a profound discovery, the measurement of this motion came about as a result of observations designed to detect stellar parallax.

Bradley's failure to detect stellar parallax did not dampen the desire of astronomers to succeed in this quest. In 1781 William Herschel sought to expand his studies beyond the realm of the solar system. He reasoned that if he could locate a relatively bright star (thus presumably nearby) in very nearly the same direction in space as a much fainter star (presumably then much farther away), by observing this pair throughout the year he should observe a parallactic shift of the brighter star with respect to the fainter one. He thus carried out a search for such "optical pairs" and in his words:¹⁴

On Tuesday the 13th of March (1781) between ten and eleven in the evening, while I was examining the small stars in the neighborhood of *H Geminorum*, I perceived one that appeared visibly larger than the rest; being struck with its uncommon magnitude, I compared it with *H Geminorum* and the small star in the quartile between *Auriga* and *Gemini*, and finding it so much larger than either of them, suspected it to be a comet.

I was then engaged in a series of observations on the parallax of the fixed stars, which I hope soon to have the honour of laying before the Royal Society

With further observation this object took on fewer and fewer cometary characteristics and finally was identified as the first major planet discovered since antiquity. It was later designated as *Uranus*.

Some years later Herschel returned to his study of closely paired stars, again seeking parallax effects. This time he discovered that some of the faint stars were actually moving in orbit about the brighter stars, gravitationally bound in binary star systems. Parallax research had again produced an unexpected discovery – that of visual binary stars so important in the derivation of the mass-luminosity relationship, of great significance in modern astrophysics.

Even after Bessel succeeded in measuring stellar parallax (using the same technique tried by Herschel), work in the field still yields unexpected discoveries – e.g., the presence of unseen companions of nearby stars.

(2) *Serendipity in Chain Discoveries.* The fruitfulness or significance of a discovery can also be indicated by the length and strength of a chain of discoveries, each link of which depends upon a discovery made previously in the sequence. In this connection the chain started by Wilhelm Konrad Roentgen and his discovery of x-rays is particularly significant.

Roentgen's discovery itself was serendipitous.¹⁵ He was engaged in a study of the characteristics of electrical discharges in a Crooke's tube, the so-called "cathode rays," which were later identified with beams of electrons. Whenever the discharge was taking place, he noted a remarkable fluorescence on a screen coated with barium platinocyanide. Furthermore, the agent

causing the fluorescence was capable of penetrating quantities of material opaque to visible light, even human flesh. Roentgen was much mystified by these strange rays and called them x-rays. Roentgen carried out further studies of his newly discovered phenomenon, and x-rays found almost immediate application outside of physics, a relatively rare occurrence with new discoveries.

Within physics the next link in the chain was forged by a mistaken assumption concerning the production of x-rays. Henri Poincaré presented the results of Roentgen's early work to the Académie des Sciences and particularly stressed the fact that the rays appeared to arise where the cathode rays impinged upon the wall of the glass tube *amid a faint fluorescent glow*. In fact, the production of x-rays and the presence of fluorescence in the glass were independent of each other, but in his description Poincaré linked them intimately.

In the audience at the Académie was an old fellow student of Poincaré, Henri Becquerel, who was at that time interested in the study of fluorescence of certain uranium compounds. Becquerel became greatly intrigued by Poincaré's suggestion that fluorescence and x-rays somehow coexist.

Utilizing the ability of x-rays to expose photographic plates, though they remained completely wrapped in light tight paper, Becquerel set about exposing various uranium salts to sunlight (to produce the fluorescence) and then placing the fluorescent mineral upon tightly wrapped photographic plates to record the accompanying x-rays. Indeed for some time the expected exposures were noted and the experiment began to evolve just as such carefully devised schemes are supposed to. Then Becquerel had occasion to develop a plate which had been wrapped but not exposed to a sample of fluorescing uranium salt. Instead, it had lain for some days in a drawer with some chunks of uranium mineral that had not been exposed to sunlight at all. This plate, surprisingly, showed even greater exposure to penetrating rays than any of those previously developed. Out of a completely false lead Becquerel had discovered natural radioactivity, thereby opening the paths into modern high-energy particle physics and studies of nuclear structure. As a direct result of Becquerel's discovery, Marie and Pierre Curie sought the source of these new radiations and succeeded in isolating two new elements, polonium and radium.

Of this chain of discoveries Taton remarks:¹⁶

. . . we must finally emphasize the part that unforeseen phenomena have played in these three discoveries; *i. e.*, the appearance of fluorescent spots on Roentgen's screen, the appearance of the image of uranium-salt crystals on the plates stored in Becquerel's drawer, the observation of abnormal radioactivity of some uranium minerals by Marie Curie. However, in none of these cases was it accidental and trivial effects, but observations made by research workers trying to pay attention to all aspects of reality as paradoxical as they might appear, that led to the investigations. In every case the investigator, by strict and fruitful scientific procedure, knew how to give an adequate interpretation so that his discovery could become a part of science. In this respect there are perhaps few better examples of the scientific method applied with strictness and perspicacity.

As the foregoing examples illustrate, serendipity appears in scientific discovery with more than nominal frequency. It seems not to be an unusual phenomenon. Indeed the ease with which one can find examples seems to indicate perhaps that there is present in the properly operating scientific method a certain characteristic which favors the finding of the unexpected — an unforeseen discovery.

One can hardly claim that the definition of "discover" itself (see, get knowledge of, find, gain knowledge of something previously unseen or unknown) necessarily implies "serendipity," for it is possible to move on to discovery of the unknown along perfectly logical and direct paths. As an example, Kepler was generally on the right path to the discovery of the laws of planetary motion, even though often for the wrong reasons. With the data he had in hand there was nothing else he could have done with as much profit. Serendipity enters only when the path of inquiry chosen happens to lead in an unexpected direction or when the logical assumption establishing the path turns out to be different from the nature of reality at the end of the path.

Among the elements present in most of the illustrations noted above there is a full awareness of the available knowledge of the subject under attack and therefore an appreciation for what factors are lacking. This curiosity concerning the unknown may explain why most discoveries have occurred since the communication revolution. Few great advances were made in antiquity,

because the great minds existing in those times were kept busy storing and sifting basic data and could not be spared for the purpose of organization, synthesis and search.

If one is going to make discoveries, he must first learn to what extent the knowledge in his field of interest has been developed. Only then should he attempt to explore the consequences of that knowledge. It is in this search for predicted behavior that the seeds of discovery lie.

In the cases noted, the discoveries occurred when someone was looking for something – anything. The secret lies not in the person, or in the technique, or in the method, or – to a large extent – in the state of the art, but, as was found by the three princes of Serendip, *in the quest*.

SOURCES AND NOTES

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3. A. B. Garrett, *The Flash of Genius*. (Van Nostrand, 1963), p. 293. Garrett quotes a letter of Walpole to one Horace Mann in which the explanation of the word “serendipity” is given.
4. B. Jaffe, *Michelson and the Speed of Light*, (Doubleday, 1960), p. 24. There seems to be some question as to the circumstances of Roemer’s work in this respect. At any rate, his work on Jupiter’s moons was not for the purpose of measuring a velocity of light.
5. Sir William Herschel, *Collected Scientific Papers*, published by the Royal Society (1912), Vol. II, p. 70.
6. W. Ley, *Watchers of the Sky*, (Viking Press, 1966), p. 451. Schwabe is quoted as having written to Richard Carrington (English astronomer, discoverer of the differential rotation of the sun): “I may compare myself to Saul, who went out to seek his ass and found a kingdom.”
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8. E. Hubble, *Proceedings of the National Academy of Sciences*, Vol. 15 (1927), 168.
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13. J. Bradley, *Miscellaneous Works*, S. P. Rigaud, ed., 1831, quoted in H. Shapley, *Sourcebook in Astronomy*, (McGraw-Hill, 1929) p. 108.
14. Herschel, *op. cit.*, Vol. I, p. 59.
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16. Taton, *op. cit.*, p. 69.

AUX BORDS DE L'AMOUR

Les reflets du fleuve dansant
Sur des yeux bruns scintillants;
Deux paires de lèvres se trouvent,
Deux cœurs se rendent et prouvent
Que la Beauté existe toujours
Assis, sur un banc, aux bords de l'amour.

James Carr

MOTTO: CHARTRES

Amorphous and weary, spent in unending token,
I seek in Henry Adams' wandering pages
Our Lady's spire. At Chartres, in feminine rebirth,
It builds its strength in arches, lifting, broken,
Soaring where architects of middle ages
Buried their secret self-doubt in the earth.

Sylvia Vance

WAR AS AN INSTRUMENT OF NATIONAL POLICY¹

War is a process of armed, organized violence conducted by states or parts of states, which requires a serious reordering of societal goals, profoundly affecting a nation's system of values, orientation, and range of expectations. Since these effects tend to be negative, if not highly detrimental to a state's well-being, it is somewhat ironic to speak of war as an instrument of national policy. For the better part of man's history, however, the resort to war has been purposeful and one might say even rational.

It is true that the purposes of the war-makers have included rather measurable gains: the acquisition of territory, people, souls, glory, or a combination of these. In mid-twentieth century, however, one finds little territory and few people remaining to be conquered, relatively little concern with saving souls, and not a whole lot of easily obtainable glory. On the contrary, the current and overriding purpose of war today seems to be to avoid defeat. In point of fact, today's superpowers threaten nuclear attack in order to deter general war.

If one accepts the hypothesis that the objectives of war have in fact changed over the course of recent centuries, a further question must still be raised. Succinctly, why has the threat or the resort to war remained a purposeful instrument of national policy?

Inherent in the phrasing of the question one can perhaps find an answer. Most political scientists date the rise of the modern nation-state from the Treaty of Westphalia (1648), which brought a close to the religious conflict of the Thirty Years' War. Yet scholars rarely attribute the origins of war as an instrument of *national* policy until the period of the French Revolution. Napoleon was the first statesman to introduce national conscription and to conduct national war. Prior to the Napoleonic Period, war remained the dominant concern of the wealthy, the dynastic, and the aristocratic.

¹Revised from a presentation for the "Seminar on Man and War," Otterbein College, November 7, 1969.

Napoleon's defeat, however, should not obscure the tremendous advantage which accrued to statesmen because of the upsurge of national feeling and national loyalty. Karl von Clausewitz, the nineteenth century Prussian military philosopher, concluded that war was just another instrument of national policy. Napoleon's historic attempts to wage national war, and Clausewitz' emphasis on military élan and professionalism, together created a reliable pattern for the purposeful resort to war. Since the early nineteenth century, war has become popularized, centralized, professional, and one might add, total.

The course of the nineteenth century, in fact, spawned a whole series of splendid little wars. War became a training ground for politician and statesman alike. But, more importantly, governments viewed the conduct of war as a profitable exercise. There were endless new lands to conquer, to control, to colonize, to protect, to Christianize. Perhaps with the significant exception of the U.S. Civil War, the process of war in the nineteenth century was characteristically mobile, defensive, and limited.

The conduct of World War I changed much of this earlier pattern. Contending armies fighting from fixed trenches seldom moved more than a few miles back and forth in a matter of weeks or months. The introduction of poison gas, the airplane, and the submarine made warfare increasingly unlimited. The new weaponry for the first time gave the edge to the offensive forces. The airplane and the submarine in particular insured that warfare would become less humane, would be carried more directly to the civilian populations, and would become less and less controlled. With the termination of World War I, statesmen around the world seemed ready to agree that war had become too horrible, too inhumane, too unprofitable.

Emerging from the most enervating conflict in man's history, statesmen sought either to regulate the resort to war as an instrument of policy or to eliminate it as a rational choice altogether. Efforts were made on a number of political fronts. The League of Nations tried to curb the resort to war by enjoining all member-states to observe a three-month moratorium prior to taking any aggressive action against another state. The Kellogg-Briand Pact "condemned recourse to war for the solution of international controversies, and renounced it as an instrument of national policy." These efforts nevertheless failed.

In a similar way, after the second general war of the century, the victors gathered at San Francisco in 1945 to declare:

We the peoples of the United Nations determined to save succeeding generations from the scourge of war. . . [seek] to insure. . . that armed force shall not be used, save in the common interest. . . . (Preamble, Charter of the United Nations)

Although the member-states have not yet engaged in a third world war, a sufficient number of smaller conflicts and continued high tensions lead one to believe that even this last effort has not eliminated the purposeful resort to war as an instrument of national policy.

What then are the circumstances which persistently militate against the elimination of war as an instrument of policy? A number of considerations are pertinent. Perhaps the most compelling factor, though, is the nature of the prevailing ideologies. Like nationalism, democracy and communism constitute uncompromising belief systems. The nation-states which symbolically represent these prevailing ideologies feel very strongly that any attempt to compromise state aims may, in fact, result in a compromise of their belief system. If one's purpose in war is "to make the world safe for democracy," the state becomes a veritable Don Quixote seeking out one threatening windmill after another. If a state's purpose is to democratize or communize the world, there can be no end to the purposeful resort to war.

Other conditions, however, bear on this theme. The historical record demonstrates that wars used to be fought with limited means for limited goals. The explosive growth in weapons systems now permits, even encourages, at least the superpowers to achieve unlimited means for destruction. As the scholarly physicist Ralph E. Lapp puts it, the American civilization has degenerated into a "weapons culture."² The more powerful states have in turn set unlimited goals for their respective national constituents. Today the superpowers seek "to preserve the peace in the world," "to ensure the self-determination of peoples," "to support wars of national liberation." Such

²Ralph E. Lapp, *The Weapons Culture* (New York: W. W. Norton and Co., 1968).

unlimited aims can only guarantee unlimited modes of conflict.

A third change has resulted in the uneven growth of military capacities. Since World War II offensive military technology has far outdistanced defensive military capacities. A state can no longer guarantee the security of its peoples by simply establishing a *cordon sanitaire* around its territory. Methods of overt and covert intervention which presently exist can be focused on a state from anywhere on the globe. Powerful rockets can carry one or more hydrogen warheads to within a half mile of its target from anywhere on the globe. Prevailing winds can transport enough deadly chemical and biological bacteria to exterminate any nation's population within weeks. Globe-circling satellites can release weapons of mass destruction at any time anywhere on the surface of the earth. Neither at the present time nor in the immediate future can any state successfully defend its peoples from these methods of warfare.

Perhaps the most disturbing aspect of this lurid picture is the ennui, unconcern, and ignorance of the general public. The majority of the American people, sometimes even without convincing evidence, take their leader's word that this or that new weapons system is absolutely essential. The conduct of war has become so complex that the general public understandably finds itself progressively less equipped to deal with issues of war and peace. For this reason and others, the general public has managed to become increasingly tolerant of war. In a recent sample poll conducted by *Newsweek*, nearly fifty per cent of those questioned averred that they did not want or should not have a voice in foreign policy decision-making. No statistic, sample or otherwise, could be more alarming.

To return to the original question posed, why has the threat or resort to war remained an instrument of national policy — no simple reply is sufficient. Certainly it can be said that the expansion of national aims, the growth of unlimited means of destruction, the superiority which offensive weaponry offers, and the tolerant attitudes of the general public together constitute a few of the more compelling reasons for the continued insistence on the retention of war as an instrument of national policy.

N'EST-CE PAS?

Il y a des femmes
aussi belles que la neige
innocentes que la neige
séduisantes que la neige
et deux fois plus froides.

Il y a des femmes
aussi pures que la pluie
fraîches que la pluie
souhaitables que la pluie
et deux fois plus imprévisibles.

Il y a des femmes
aussi douces que le vent
chaudes que le vent
rafraîchissantes que le vent
et deux fois plus capricieuses.

Il y a des femmes
aussi fidèles que les étoiles
scintillantes que les étoiles
mystérieuses que les étoiles
et deux fois plus éloignées.

James Carr

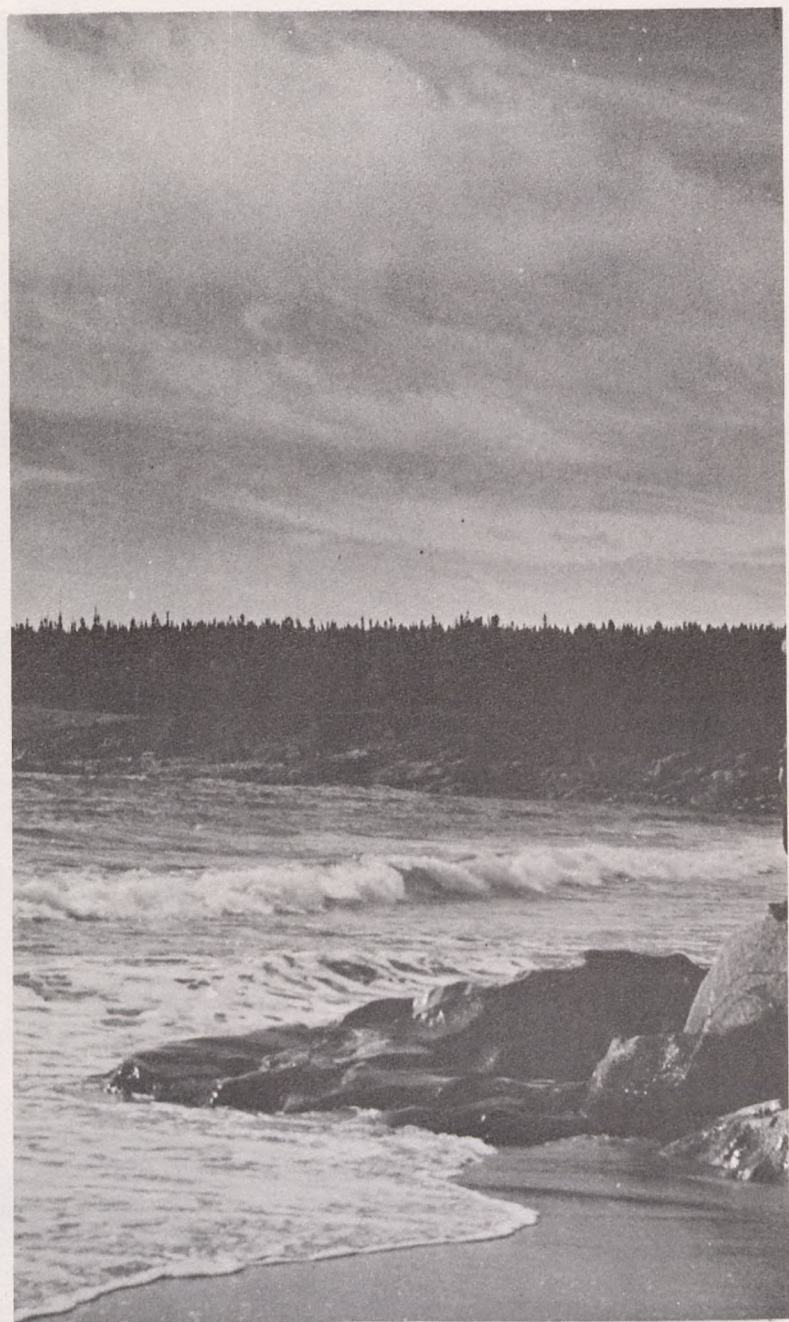


CONSIDERATIONS IN A CHANGING ENVIRONMENT

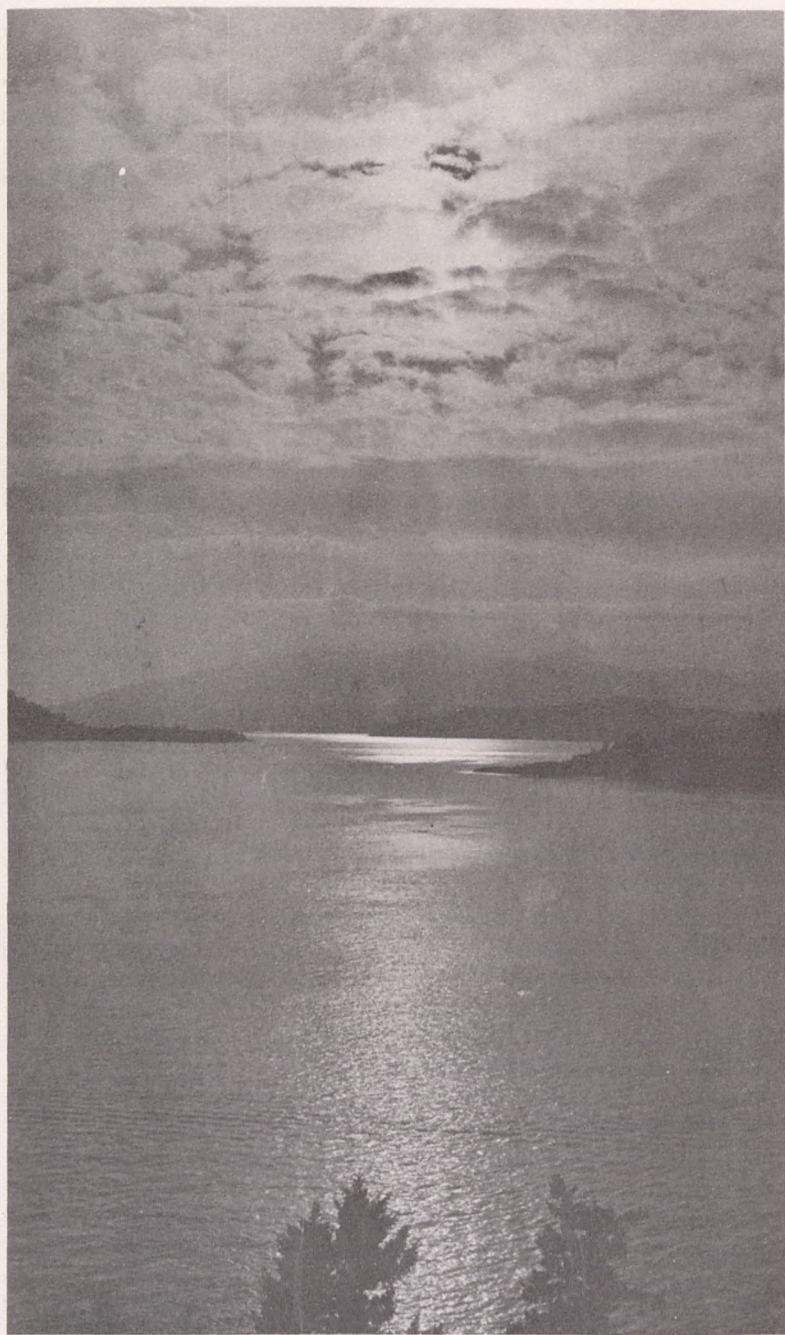
Photographs
by

Frederic R. Bamforth









M. S. Herschler

THE PRODUCTION OF HERMAPHRODITIC RABBITS FROM GENETICALLY FEMALE EMBRYOS AND ITS IMPLICATION ON THE PROCESS OF SEXUAL DEVELOPMENT IN MAMMALS

Abstract

Rabbit embryos, 13-19 days post conception, were treated *in utero* by injection into their amniotic cavities of a homogenate of tissue from several sib embryos. The gonads of the treated embryos were removed at 29-31 days post conception and histological sections were prepared and stained. Photographs of these sections, which illustrate the production of hermaphroditic rabbits when compared with the sections made from the gonads of normal rabbits, were taken.

In the cases of successfully treated individuals, the gonadal sections fall into two categories, those histologically identical to that of a normal male gonad and those histologically intermediate between the sections of normal male and normal female gonads. The production of only two categories, male and hermaphrodite, leads one to conclude that successful treatment of the embryo causes alteration of the usual pathway to production of the female gonad, but not to the usual pathway to production of the male gonad. The difference may be explained by the introduction of cells with the Y chromosome in addition to the X, into an individual with two X chromosomes per cell. The opposite result does not occur in the treated male because of the presence from fertilization, of cells with both the X and Y chromosomes and their gene products. At the stage of development during which the gonad is being formed, the presence of cells with the Y chromosome causes a masculinizing effect on the gonad due to activation of genes of that chromosome.

Introduction

The primacy in mammalian sexual development of genes located on the sex chromosomes is a question that has not been fully resolved. Inferences have been made about genetic effects on human sexual development from post natal observations of cytogenetic anomalies in patients with reproductive disorders.

On the other hand, introduction of six hormones during development has led to modification of the reproductive tracts of mammals and a hermaphroditic condition in cattle which also affects the gonads, has been cited as a prime example of the influence of exogenous sex hormones on mammalian sexual development.

This study, utilizing a technique of incorporation of cells introduced during and prior to the period of gonadal development, produced hermaphrodites that can be attributed to the presence of masculinizing genes on the Y chromosome of the incorporated cells.

Materials and Methods

Female rabbits, pregnant 13-19 days post conception, were partially anesthetized with a standard dosage of sodium nembutal given intravenously, shaved abdominally, covered with surgical film, anesthetized locally with 2% procaine hydrochloride and opened to expose the uterus. A small cut in the uterine wall at the implantation sites of two embryos adjacent of the body of the uterus, exposed the tissue to be used for a donor homogenate. Following the passage of the embryonic tissue through a 20-gauge needle and mixture with Hanks Balanced Salt Solution (Difco), the more liquid portion, containing some cellular material, was injected via a 26-gauge needle through the uterine wall into the amniotic cavity of the sib embryos. By combining the homogenates of two donor embryos, the chances of male-female interaction were increased to 75% of all embryos treated. The incisions were then closed and the rabbit placed in its cage until 29-31 days post conception, at which time a cesarian section was performed to recover the treated embryos.

The embryos, when harvested, were analyzed by studying histological sections of the gonads. The gonads from treated embryos were compared with similar sections made from untreated embryos at various stages of development. Photographs were taken of the histological sections utilizing Polaroid positive/negative film.

Results

In the rabbit, the onset of sexual development can be observed

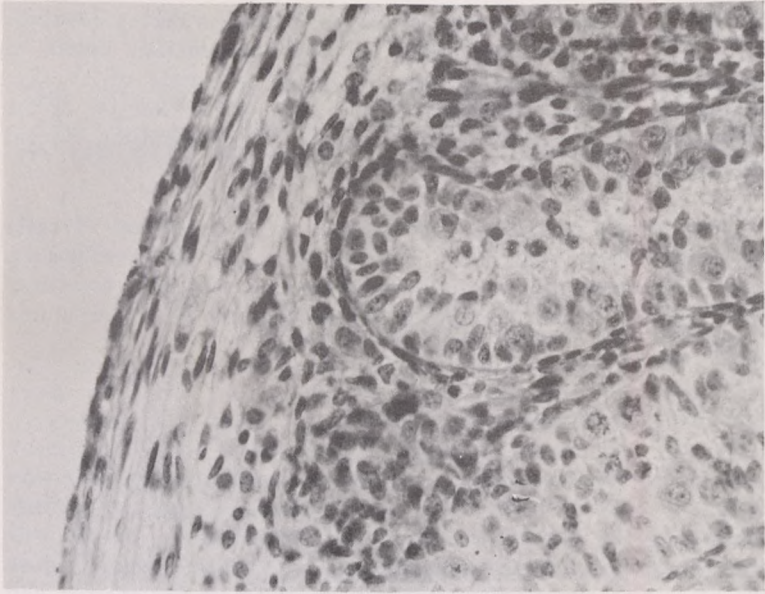


Figure 1

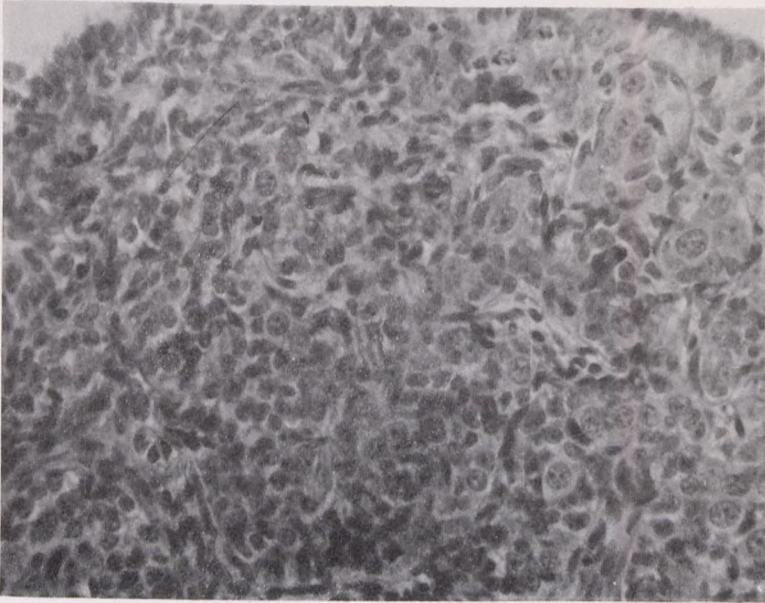


Figure 2

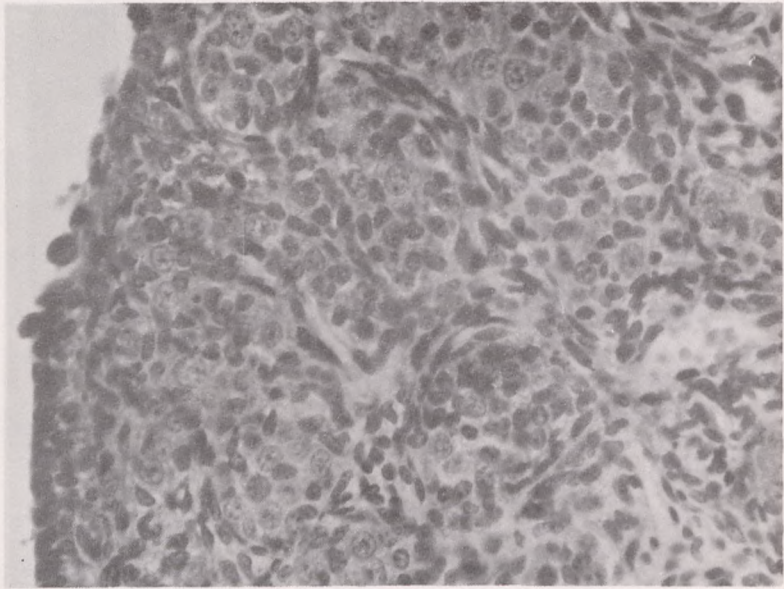


Figure 3

histologically by 13-14 days post conception, at which time the gonad develops from mesodermal tissue of the gonadal ridge on the mesonephric kidney. The gonad is indifferent at this stage as no seminiferous tubules or egg nests are present. Primordial germ cells, of endodermal origin, migrate to this area during the period of gonadal development. By sixteen days post conception the gonad may be classified as male by the formation of the primary sex cords (medullary sex cords) which develop into the seminiferous tubules. Secondary sex cords (cortical sex cords) develop at seventeen to eighteen days post conception into egg nests in the gonad with a female genetic constitution.

The histological comparison of normal and hermaphroditic gonads is illustrated in Figures 1-5. The normal male rabbit gonad at 29 days post conception is shown in Figure 1. Note the well developed seminiferous tubules, containing the large primordial germ cells and the surrounding connective tissue. The formation of the tunica albuginea can be seen as the connective tissue and squamous epithelium that covers the edge of the gonad. Figure 2 depicts the normal female gonad at 29 days post conception. Note the egg nests with primordial germ cells. The egg nests are smaller and much less well defined than the seminiferous tubules of the male gonad. In addition, a solitary layer

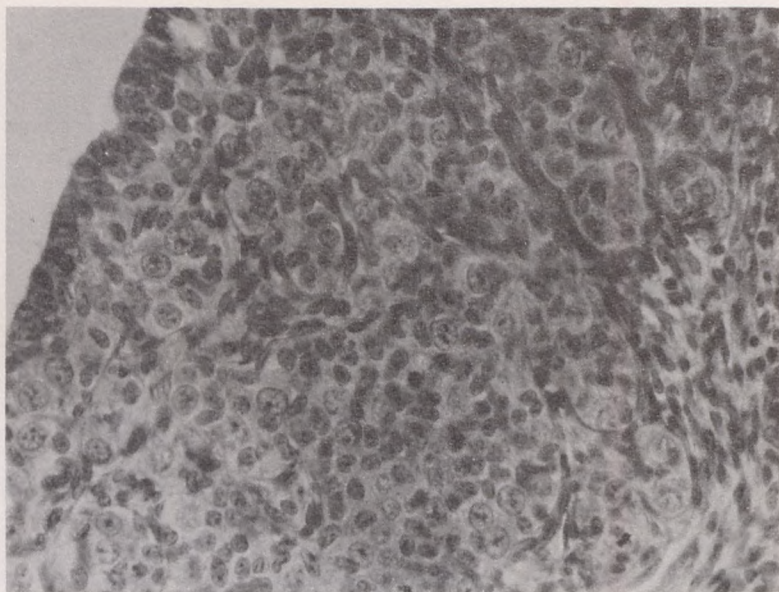


Figure 4

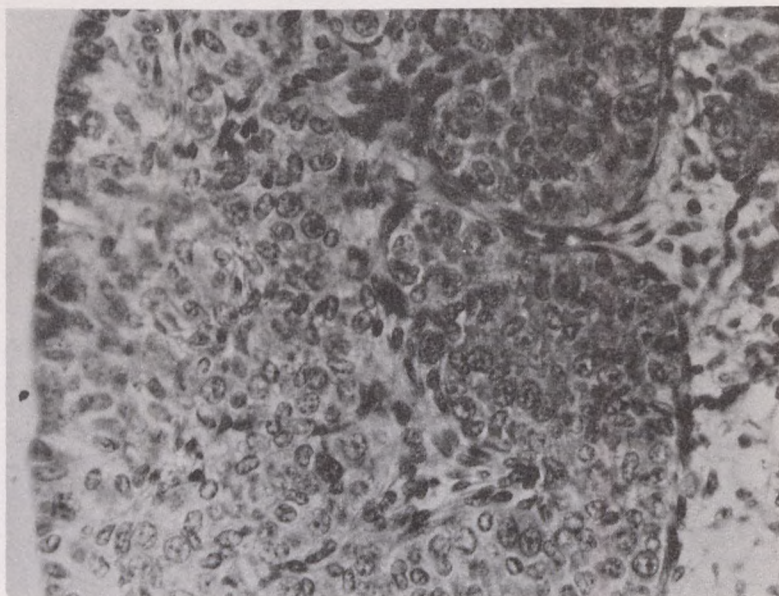


Figure 5

Photographs by the author

of columnar epithelium covers the female gonad. Figures 3-5 are illustrations of various hermaphroditic gonads, presumably female gonads that have undergone modification during development. Each one of these photographs shows a columnar epithelium similar to that of the normal female gonad, but with more internal organization than the typical egg nests of the female. Some of these areas are extremely reminiscent of seminiferous tubules.

Altogether, 108 treated young were born to 31 rabbits. In all litters in which abnormal gonads were observed, they could be classed in two categories only, male or hermaphrodite. Thus treatment of genetic females with cells of male origin leads to gonadal hermaphroditism, but treatment of genetic males with cells of female origin has no teratological effect.

Discussion

Benirschke and Brownhill (1962) are adherents of the theory that sex hormones play a prominent role in sexual development. They believe that the freemartin, a hermaphroditic calf born twin to a bull, is the result of a transfer of sex hormones from the earlier developing male gonad of the bull calf by means of an anastomosis of the chorionic vascular system of the twins. Their evidence (Ryan *et al.*, 1961) is that in humans and marmosets an enzyme of the placenta converts androgens to estrogens so that cytogenetic chimerism is not accompanied by masculinization of females twin to males. This enzyme could not be isolated from the bovine placenta. Herschler and Fechheimer (1967) citing cell transfer evidence and an association of degree of masculinization of the reproductive tract of freemartins with cytogenetic chimerism, believe that the action of genes of the Y chromosome, introduced by the cell transfer causes the masculinization of the gonad rather than transported sex hormones.

The work reported here on formation of hermaphroditic rabbit gonads is further evidence for this theory of gene action primacy in sexual development of mammals. Embryos which become abnormal because of transfer of cell homogenates before the onset of gonadal development cannot be a product of transferred sex hormones. They must be the result of gene action after introduction of cells with the Y chromosome.

Others have done studies that bear on the origins of gonadal

development. Tarkowski (1964) and Mintz (1968) utilized fusion of four and eight cell mouse embryos to produce cytogenetic chimerae. In each case, hermaphrodites were produced among the offspring of the fusions. These cases were not caused by sex hormone introduction during fusion because at this stage of development no hormones are produced. Instead, they must be attributed to incorporation of cells of XX constitution with cells of XY constitution.

Conclusion

Thus it is necessary to conclude that gonadal development is under the influence of the genetic material of the individual. Evidence from this study strongly supports such a conclusion. Genetic females which had incorporated cells of male origin became hermaphrodites. Genetic males which had incorporated cells of female origin remained normal males. One must conclude that a strongly masculinizing set of genes is located on the Y chromosome of mammals and that its introduction into the developing genetic female produced a hermaphrodite gonad.

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Robert G. Clarke

AND IN THE END

In the beginning there was Man, a rational, thinking, laughing, passionate creature, who decided he was bored. So Man said, "Let there be light." And there was light: fluorescent bulbs and incandescent bulbs, neon signs, sun lamps, mercury vapor tubes — all blinking on and off. And Man used this light to eliminate the darkness; thus day was night and night was day. All was light and he could see, both day and night.

And Man said, "Let there be lights to rule the east, and lights to rule the west." So Man created Ohio Edison, South Central Power, DP&L and CG&E; and the rest of the world burned matches. And Man divided the lesser lights from the greater lights; he divided the east from the west.

And Man said, "Let there be heaven and earth." And Man used fertilizers and chemicals to increase his output; he used dredges to reclaim the swamps, and urban renewal projects to reclaim the cities. He used barometers and thermometers and cloud seeding devices to predict and control the weather. He sent rockets into space to follow the paths of his telescopes and circle his satellite planets. Man saw the earth and longed for more of the heavens.

Then Man said, "Let there be life." And he dissected frogs and injected mice; he saw amoeba and protozoa and played with the living cell. Man analysed guinea pigs and introspected his images. He formulated the psyche and populated it with ego and superego, sibling rivalries and paranoia. And Man proclaimed in-groups and out-groups.

Then Man said, "Let there be enlightenment." So he concocted neurons and synapses and dendrites. He formulated education and gave himself colleges. His time was filled with sports spectaculars, and fraternities, and dancing, and attending to talking. And there was numbness throughout the enlightenment.

Man then said, "Let there be god." But Man could not decide what type of god he should have. So he first made him with an animal's head, and then in the shape of the sun and moon. But

he was not satisfied. So Man made god in Man's image. He gave him a long white beard and told him he was infinite, omniscient, perfect, incomprehensible, and on Man's side. He told him that he was so much on Man's side that he would die for Man — and that was the proper thing to do. Thus Man made god, set him on a pedestal, went back to work . . . and blew himself up.

And in the end, there only was God.

WONDERLAND II

Light the spring air that shapes renewing rites,
For words that once were breath and earthly life
Have flung an echo off the ancient wall,
Flaunting its new distortion not to die.

Is not an echo better than a mirror?
Or is there life in some new haunted Alice
Who walks through self to self, and finds dimensions
Altered in the passage? Who would seek out,
At tea, some new March Hare, and play croquet
With pink flamingos?

That cupping air, that echo, and that dream
Count out the pulse of some remembered past
In some tomorrow — while hidden in the real,
On cross street by the drug store bric-a-brac,
A sudden turning brings to play the brief
Prismatic radiance of a word, renewed
For one fine burst of moment to the heart.

Sylvia Vance

James K. Ray

ON PLANTING FLOWERS AND SPADING

Of planting many flowers there is no end,
and much spading is a weariness of the flesh.

At the outset you should follow the dictates of Holy Writ and start with the spading (see *Matthew 20:16*).

Next you need to know the precise meaning of the word *spade*. The kind with which you will be concerned is not the one that occurs in the statement, "You idiot! Why did you trump my ace of spades?" Instead, the kind you need is a garden tool. It consists of a hickory shaft about thirty inches long, with a metal blade (approximately twelve inches long and seven inches wide) on one end and a long-suffering husband on the other.

Spading for flower-planting would not be so bad if one spading would do the job, but that is never the case. The spader's wife says, "We'll [meaning you] first dig up that clump of phlox; that's where I want to put the rhododendron [the new flower to be planted]. Now we'll put the phlox where the hemerocallis is. Now, let's see. Where can we put the hemerocallis? Oh, yes, we'll plant it where the Shasta daisies are." And so on, until you have dug at least six holes instead of one. But take heart, gentle gardener, because you will eventually reach a point of no return; that is, if your patience and back hold out, you will finally come to the point where the farewell-to-summer, which you have most recently dug up, will have to be given to one of the neighbors or thrown into the rubbish can — usually the former, since your wife simply cannot bear to see a single flower thrown away.

In the course of digging up the phlox or the hemerocallis or the Shasta daisies, you inadvertently step back on some Siberian iris, which the wife, just to complicate matters for you, surreptitiously planted there on a day when you were absent from the premises. Immediately she will exclaim, "Look what you've done!" After you have turned around and surveyed the damage, you might reply, "I cannot see what flowers are at my feet." Now, if your wife knows the poetry of the Romantic period, she will respond with, "Don't try to be facetious." On the other

hand, if she is not too well acquainted with Keats, she will say, with considerable acerbity, "Well, why don't you watch where you're stepping, stupid?" In any event, you get the feeling that all your labor has been for naught.

If the spading occurs on a day when the Reds and the Cubs are playing an important game, you can usually manage to see a half-inning or so of the game by pretending that you have to go inside the house to get a drink of water. After all, you have worked assiduously for the last two hours and are perspiring freely. If the day fortuitously happens to be extraordinarily hot, you can say that you do not feel so well and that you had better go inside and rest for a while. In this manner you may get to see two or three innings of the game. But don't let her catch you at it, for hell *doth* have a fury greater than a woman scorned, and that is a wife whose husband is enjoying a moment of leisure in his comfortable air-conditioned family room when she thinks he ought to be outside grubbing in the soil.

Spading is generally done in a spot where there are more stones than soil. None of the stones is ever smaller than a large cantaloupe. This is one of the things that take the monotony out of spading; you never know what you are going to turn up next. It may be a brickbat left by the builders, or a pretty red granite boulder. Naturally, the boulder is about the size of a basketball and lies about eighteen or twenty inches below the surface of the ground, embedded in sticky blue clay. After applying some principles of physics which you have not thought about since your high school days, and using various implements, including a long-handled shovel, a crowbar, and a six-foot length of two-by-four, you finally loosen the boulder from its moorings. As you mop your profusely sweating brow with a red bandanna handkerchief (white linen would never do the job), your wife requests you to carry the boulder to the far corner of the yard and deposit it there among the other evidences of your diurnal toil; she may want to use it when she gets around to building the rock garden which she has always had in mind — for you.

William T. Hamilton

THE WILDERNESS SAINT AND THE SIN OF OWNERSHIP:
WILLIAM FAULKNER'S *GO DOWN, MOSES*

For the student of literature, one of the clearest twentieth century developments is the emergence of American writing as an integral and established part of the literature of the world. No longer can even the most biased of British critics consider American literature a provincial branch of English letters, a judgment that was fairly common in the nineteenth century. Because the United States is the leader in what is more and more ironically called progress, the literate world has increasingly turned to American books for an account of man's present condition.

Foremost among the writers who demonstrated the maturity of our literature is William Faulkner, who was content to spend most of his lifetime in a small town in Mississippi, surely one of the most provincial of the world's provinces. Although Faulkner's command of the techniques of the novel was so complete and his imagination so rich that he might have become a great novelist even had he been confined during his creative years to Bass Rock in the North Atlantic, there is more to Faulkner's possession of the reading world's imagination, I think, than can be explained by the Romantic notion that genius, no matter how confined, will find its proper audience. I believe that mythical Yoknapatawpha County, located somewhere in the Deep South and somewhere in Faulkner's imagination, to which he claimed to be "sole proprietor," has characteristics in common with the rest of the planet, characteristics which go far to explain how this "Southern regionalist" has established himself as a part of world literature. In other words, although Faulkner is concerned with the peculiar history of the American South, that region as he describes it has features that any one who acknowledges the mythical truth of the story of the Garden of Eden will recognize as part of his own imaginative landscape.

Go Down, Moses is a book that invites discussion from various points of view. It contains some of Faulkner's most characteristic, most engaging humor. (I am so convinced of this that I ask my American literature students to keep rereading the story entitled "Was" until they discover that it is comic; I have

to confess that many of them seem to give up before they find the humor.) The book also contains one of the best hunting stories in our language; no one has written more convincingly about the joys, both physical and philosophical, of the chase than the Faulkner of "The Bear." And *Go Down, Moses* is a beautiful example of Faulkner's incredible range in creating characters. The McCaslins are a remarkable family and, like most such families, have remarkable friends: Boon Hogganbeck, the ugliest man in the county, who, in a lifetime of hunting, has never been able to hit anything with a rifle, except by accident; Sam Fathers, the old ex-slave who teaches young Ike McCaslin what he needs to know of the wilderness and in whose veins runs the blood of all our fathers, white, black and Indian; and Uncle Ash, who has saved a couple of shotgun shells for the day when he can hunt instead of cook for the hunters — all of these characters as well as the representatives of old aristocratic families like the Compsons and Sartoris. Even the dogs and the bears are interesting characters. Faulkner shows a remarkable facility for handling large casts of characters, on the order of Tolstoy's and Thackeray's, rather than the cramped, socially impoverished little casts of Hawthorne and Hemingway.

Interesting as these aspects of the novel are (and I follow Cleanth Brooks in considering *Go Down, Moses* a novel rather than a collection of short stories¹), I want to focus on a different element. Great literature has seldom been content with the entertainer's role, and one function it has often assigned itself is to tell, in imaginative terms, the history of a people. *Go Down, Moses* creates such a history. That chronicle is composed in almost equal parts of what might be called the historian's history and what might be called the artist's history — of what did happen and of what, in symbolic terms, should have happened.

A number of American writers have seen the American story as human history foreshortened. As men went from a happy, simple birthplace somewhere in the Near East to the unhappy complexities of fully developed civilizations in the West, so has America been seen as a progress from a New Eden, a new birthplace of wilderness simplicity, to the complexities of modern life. For Cooper, modern life was the America after Independence; for Mark Twain, it was America after the Civil War; for John Steinbeck, America after the Dust Bowl. Just as these writers have seen American history as human history foreshortened,

Faulkner has provided a foreshortened American history in the chronicles of Yoknapatawpha County. The long fourth section of "The Bear" deals with not much more than a century of time, but in that time Faulkner traces the history of our continent from the first landing of the white man on these wilderness shores to the complete destruction of the wilderness and its replacement with the paraphernalia of modern industrialized life. In the terms of Ike McCaslin, who in many respects in these pages seems to be Faulkner's spokesman, this history is the chronicle of "ownership," a word that Ike sees as being perpetually ironic. For to see oneself as "owning" a piece of the creation is to dispossess oneself of it. In Ike's view, this is the horror both of slavery — the "ownership" of fellow human beings — and of the destruction of the natural setting in which we must somehow live — the "ownership" of the land.

At the moment when old Ikkemetubbe, the Chickasaw chief, traded his interest in the Mississippi wilderness to Thomas Sutpen for a sum of money, he indicated that he did not own the land in the first place. Somehow, the willingness to put a cash price on the spiritual values that constitute the primeval paradise is to indicate one's own spiritual unworthiness. For the white owners, a full relationship with nature is never possible, for those who purchase and settle the land have dispossessed themselves from the very thing they tried to buy.

For old Carothers McCaslin, the white ancestor of most of the principal characters in this novel, both black and white, the dispossession is compounded. He has not only bought the land he cannot own; he has purchased human slaves. And with at least two of the people he has bought, he has tried to forge a relationship that should transcend ownership. The McCaslin family, which in the generation the novel is principally concerned with includes both Ike and his distant negro cousin, Lucas Beauchamp, has been cursed, Ike believes, by the confusion of love and money. As a young man, Ike tried to redeem his family from this curse, redeem it first by paying the cash debts of the whites to the blacks and second by relinquishing his title to the land. Only by so doing can he restore himself to true possession of the American wilderness. In that kind of possession, he inherits his title not from Carothers McCaslin, but from old Sam Fathers, the lineal descendant of free Chickasaws and African kings, and of whatever is left of wildness and freedom in the third of the American races, the white.

In assuming these obligations, Ike takes upon himself the attributes of what may be called the wilderness saint. These saints — and there are a number of them in our literary heritage — are always white, but they are always more at ease in their relationships with blacks or Indians or Polynesians than with members of their own race. Their critical analysis of white (which is to say modern) society usually involves some sort of negative reaction to our cash economy. Just as Huck Finn sells his inheritance to Judge Thatcher before embarking on his raft and Henry Thoreau reduces both expenses and cash in hand to a minimum before retreating to his wilderness cabin, so Ike reduces his possessions to an iron cot, a battered coffee pot, some hunting gear and a few carpenter's tools. Though he cannot reform all of the society which has corrupted itself by injecting financial considerations into what should be matters of the heart and soul, Ike thinks he can make a beginning — can, that is, atone to some extent for his family's sins of possession.

It is apparent that Faulkner means the history of the McCaslin family to be a symbolic history of the South. By owning both land and men, the Carothers McCaslins, the Thomas Sutpens, the Compsons and the Sartorises helped to make the Civil War inevitable. But Faulkner allows little moral complacency to the North either. The North with the coming of industrialism learned ever more complicated ways of turning nature into dollars, and Faulkner followed the lead of Southern economic philosophers in believing that the North had invented an exquisite form of slavery in the factory system. The implication seems to me to be that the United States, North and South, has accelerated the process observable in much of human history — the process through which, by conquering nature, man alienates himself from it. It is interesting to notice the extent to which Faulkner's fictional rendering of American history anticipates the analysis we are presently getting from some of our environmental biologists. As one of them has recently written:

We claim that human relationships and communion with nature are the ultimate sources of happiness and beauty. Yet we do not hesitate to spoil our surroundings and human associations for the sake of efficiency in acquiring power and wealth. Our collective sense of guilt comes from a general awareness that our praise of human and natural values is hypocrisy as long as we practice social indifference and convert our land into a giant dump.²

“Human relationships and communion with nature. . . the

ultimate sources of happiness and beauty" — both of these are violated by Carothers McCaslin. His incest with his mulatto daughter is far from being his first sin. By considering human beings property, he has already been guilty of perversion, and Ike McCaslin believes that this perversion is predestined from the time when he tries to own the wilderness rather than live in cooperative harmony with it. When Ike McCaslin kills his first deer, he observes:

I slew you; my bearing must not shame your quitting life.
My conduct forever must become your death.³

In this way, Ike does not exploit the wilderness; instead a creative relationship is established between hunter and hunted, between the giver and the receiver. Ike, and I think Faulkner himself, fear that the bearing of modern America has not been worthy of the wilderness from which it was created.

So Ike relinquishes most of the power of modern man. He will not own and will not exploit the land. Instead, his energies are devoted to the pursuit of what remains of the primeval life of his region. As with the more orthodox varieties of saints, his life is defined largely in terms of his negations. He is allowed his first sight of Old Ben, the big bear of the deep swampy woods, only when he leaves behind his rifle, his compass and his watch. Though he will carry these weapons with him again on later trips, he never faces the world with a full kit of modern apparatus. His code is a simple one, determined by that first buck he slays. His life must acknowledge that he, like his prey, is dependent on the natural world in which he lives.

But though he tries to be a saint, he remains a character in a modern world of fiction. That is to say that Ike is the creation of a writer who, although he is in many respects a "Romantic," accepts some of the obligations of the realistic school of fiction. Further, Ike McCaslin is doomed to at least a partial failure. And that failure, like his original gesture, is symbolized in part by money.

Ike is an idealistic young man when he rejects his inheritance of land and tries to divide what remains of his cash inheritance among Carothers McCaslin's black descendants. He is still idealistic but no longer young when he meets the granddaughter of Tennie's Jim, who is in turn the great grandson of Carothers McCaslin by his negro slave Eunice. This woman, who is never

named when she appears in "Delta Autumn," has had a baby by Roth Edmonds, who is himself a great-great grandson of Old Carothers. Ike, who is now nearly eighty years old, must face again the original sin of his family. And he faces it by giving the woman the money Roth has left him and telling her to go away, go back up North, get out of the South which still cannot face the mixing of the blood. It takes considerable imagination on Ike's part to see this woman as a negro, but in the South, where his mind has been forged, ninety-nine parts of white blood does not make the one remaining negro part white. The cycle has repeated itself - money is again offered instead of love. For, as impossible as it might seem, this woman loves Roth Edmonds, and she says to Ike in language that must be very painful to him: "Old man, have you lived so long and forgotten so much that you don't remember anything you ever knew or felt or even heard about love?"⁴ Money instead of love: Carothers had owned the women on whom he engendered the black side of his family. Now Roth Edmonds through old Ike McCaslin offers money instead of love to the woman whom he does not even recognize as a distant cousin. The cycle begins again: Ike's renunciation has not been enough to bury the curse on his family. But his failure is not, I think, complete. Until that last moment when his nerve or his imagination fails him, Ike has offered an alternative way of life, a way that offers humility towards nature instead of attempted mastery of it, that shares rather than exploits, that possesses instead of owns. A saint cannot save the world, but he may avoid participating in the world's self-destruction.

Ironically, the other side of Carothers McCaslin's family, the side eternally labeled as negro, is not forced to choose between Ike's kind of saintly renunciation and Roth Edmonds' sullen participation in the sins of the fathers. By having once been owned, like the land itself, they seem forever to avoid the curse of ownership. By having to face their own identity as slaves or descendants of slaves, they seem to escape the kind of love that must insist on the ownership of the beloved. But Lucas Beauchamp, who shares with Ike McCaslin the role of hero in this loosely knit novel, only narrowly averts the sins that come from money. The means by which he does so are instructive. Most of his story is told in "The Fire and the Hearth" section of the book, and that fire which is never allowed to die is the image most closely describing him, just as the accoutrements of the hunt are the images most closely identified with Ike. Lucas survives the many hazards of his subservient position. He nearly

murders Zach Edmonds, whom he suspects has seduced his wife, but he learns to live with the knowledge that he can never take advantage of the fact that he is the direct descendant of one of the principal landowners of Yoknapatawpha County. In spite of his bitterness, he never lets the fire die on his hearth, but maintains the kind of close family ties that seem impossible for his white cousins. He is an elderly man when the lust for riches possesses him, when he nearly loses his wife Mollie who no longer wants to live with a man who spends his nights chasing buried treasure with a strange divining contraption purchased from one of the travelling salesmen who haunt Yoknapatawpha County. But Lucas is no fool: the fire that has never burned out turns out to be worth more to him than whatever money may be buried in the woods. His gesture is the reverse of Ike's: Ike uses money to buy Roth's way out of a human relationship; Lucas relinquishes the hope of money to maintain such a relationship.

In the title story, "Go Down, Moses" which closes the novel, the negroes, in the person of Lucas's wife Mollie, foreclose symbolically the debt they are owed by the whites. Samuel Worsham Beauchamp, great-great-great-great grandson of Carothers McCaslin, has been executed in Chicago for the murder of a white policeman. Aunt Mollie, recalling that Roth Edmonds ran this young man off the plantation for his juvenile delinquencies — sold him, that is into Egypt — wants his body returned in state to his home. The white gentry don't argue, in fact can't argue. They find that financial considerations are both incomprehensible and irrelevant to Aunt Mollie. She wants her grandson back. So a tawdry but expensive funeral is arranged and paid for by Gavin Stevens and the editor of the Jefferson newspaper. The lesson seems clear. Since the whites seem to be willing to buy and sell anything and everything, they are obviously the ones to arrange and pay for all those ceremonies that call for money. Aunt Mollie is quite willing to see the whites in terms of the definition their own conduct through history has provided. It is poignant and revealing that Roth Edmonds himself is not asked for a contribution. Though Aunt Mollie nursed him when his own mother died in childbirth, his conduct has revealed that he is not worthy to participate in a ceremony of the heart even by contributing money. Roth Edmonds's fall from grace is one of the most interesting aspects of this novel, though it is one I have had to slight here.

I believe that these issues constitute the moral background of *Go Down, Moses*. Faulkner describes here, perhaps as clearly as

anywhere in his work, his view of the present human condition. It is a standard notion of twentieth-century literature that modern man has found himself "alienated." Seldom, however, is it as clear as in Faulkner from what he is alienated. Somehow, man has looked at his surroundings through the wrong kind of lens. He has seen the world and its inhabitants as things he can translate into symbols he can carry around in his billfold, has seen his ability to purchase acres or bodies as the ability somehow to master them. He has come to nature, not with Ike McCaslin's humility, but with Carothers McCaslin's arrogance. Ike tells his cousin that God

told in the Book how He created the earth, made it and looked at it and said it was all right, and then made man. He made the earth first and peopled it with dumb creatures, and then he created man to be his overseer on the earth and to hold suzerainty over the earth and the animals on it in His name, not to hold for himself and his descendants inviolable title forever, generation after generation, to the oblongs and squares of the earth, but to hold the earth mutual and intact in the communal anonymity of brotherhood, and all the fee simple He asked was pity and humility and suffering and endurance and the sweat of his face for bread.⁵

It is the spirit of this injunction that Ike believes man has violated, and it is by returning to this spirit that he hopes to redeem his family. This is not to say that either Faulkner or Ike is a socialist, advocating the abolition of private property. Ike is too concerned with his own salvation to advocate a political program for all of Yoknapatawpha County, let alone for the world at large. And Faulkner is not a political philosopher, but an artist. Nonetheless, I think as artist Faulkner was concerned about the symbols with which we live and believed that we tend to live by the wrong ones — perhaps by quantitative rather than qualitative symbols. Major de Spain, who as a hunter should have known better, came to see the big woods in terms of board feet of lumber, rather than in terms of the kind of unified spiritual and physical experience he himself had had in those woods. When Ike comes to tell Major de Spain that he is about to make one last trip into what is left of the forest which was once the home of Old Ben, the great bear, de Spain asked him to bring back some squirrels. Major de Spain would probably have done well to heed Thoreau's warning that you can't get a huckleberry in Boston; the essence of that wild fruit is to be tasted only on the tangled hillsides where the berry grows.

Perhaps the difference between the two kinds of symbols — qualitative and quantitative — is to be found most clearly in a remark General Compson makes to McCaslin Edmonds, Ike's cousin and guardian:

You shut up, Cass. . . You've got one foot straddled into a farm and other into a bank; you ain't even got a good handhold where this boy [Ike] was already an old man long before you damned Sartorises and Edmondses invented farms and banks to keep yourselves from having to find out what this boy was born knowing and fearing too maybe but without being afraid, that could go ten miles on a compass because he wanted to look at a bear none of us ever got near enough to put a bullet in and looked at the bear and came back ten miles on the compass in the dark; maybe by God that's the why and the wherefore of farms and banks. . . .⁶

Farms and banks on the one hand, the ability to find one's way through ten miles of darkened, trackless wilderness with a compass on the other: the qualitative symbols are those that most fully acknowledge man's place in nature; the quantitative ones are those that enable man, for a time, to deny that place. The highest function we can ask of our artists is to account imaginatively for the situation in which we find ourselves. As an increasingly complex technology builds itself upon the foundations of "farms and banks," we find ourselves increasingly remote from the nature with which we must eventually make our peace. The explanation Faulkner makes of our situation in *Go Down, Moses* seems increasingly recognizable, as we travel deeper into this, no longer new, twentieth century.

NOTES

1. Cleanth Brooks, *William Faulkner: The Yoknapatawpha Country* (New Haven, 1963), pp. 244-245.
2. René Dubos, *So Human an Animal* (New York, 1968), pp. 1-2.
3. William Faulkner, *Go Down, Moses* (Modern Library Edition, New York, 1942), p. 351.
4. *Ibid.* p. 363.
5. *Ibid.* p. 257.
6. *Ibid.* pp. 250-251.

THE MISCELLANY'S HERITAGE; OR, FACULTIES DO WRITE!

Whether or not it is true that college faculties are born with pen in fist, they undoubtedly come with ink in their veins and with a driving gene that sooner or later demands expression in print. Certainly at Otterbein University (to use the baptismal name) the first administrative and teaching force not only arrived writing vigorously but made their advent, if not actually in a printshop, at least on the busy doorstep of *The Religious Telescope*, the pioneering weekly of the United Brethren in Christ. From the early months of 1846 (a year before the denomination's first college finally became a working reality) down to the appearance of *The Otterbein Miscellany* in May, 1965, the faculty and administration of the college have shown a felt need to meet the obligations of their world through intelligent and often distinguished printed communication. The scribbling gene, though tending to be recessive in certain decades, has always had to be satisfied.

Though the question of whether the United Brethren church should start a denominational program of higher education had first been given favorable consideration in the Quadrennial General Conference at Circleville, Ohio, of May, 1845, it seems to have been a "Suggestion" from the Rev. William Davis (later to be Otterbein's second head), published in the February 6, 1846, issue of *The Religious Telescope*, that signaled a move toward realization. Rev. Davis, a presiding elder for the Western District of the Miami Conference and located in Bluffton, announced his intention to introduce at the next session of the Annual Conference, a resolution favoring "a union of the Miami, Indiana and St. Joseph Conferences to build a house expressly for literary purposes." He proposed a three-story building, forty by eighty feet, to which should be attached "a respectable office for the librarian." He would try to procure its location at Bluffton, he said, inasmuch as this was a central situation. This building would be the nucleus of a higher education center for the church, especially for the ministry. In a long article, "Union is Strength, and Wisdom is Wealth," Rev. Davis argued eloquently in the same issue for the better training of ministerial leaders, and for the establishing of various educational centers. His proposal was approved at the March 5 meeting of the Miami

Annual Conference held at Otterbein Chapel in Darke County, Ohio, and a resolution adopted forthwith urging union with the North Indiana or White River and the St. Joseph Conferences to back such a project.

It was to be the Scioto Conference, however, that shortly afterward found a way to start the church's first college. And it was not the Rev. William Davis but the 32-year-old Rev. Lewis Davis who became the major organizing force, a story so well-known that it need not be recounted here except to point out that appropriately enough, the fullest and richest contemporary record of the new school's birth and early adventures is to be found through the years 1846-49 in the weekly issues of *The Religious Telescope*. The *Telescope*, published in Circleville, Ohio, expressed the best of the most literate and progressive thinking in the denomination. It not only fostered the cause of the new school from the start but opened its columns freely to any announcements, news, contributions from administrative and teaching staff, and eventually to undergraduate writing of all kinds. It was the first printed voice of Otterbein and as such was used vigorously and well.

As if to guarantee the printable literacy of the new institution, the Conference named as the first administrators long-time editor of the *Telescope* and a fluent writer, Bishop William Hanby, Rev. Jonathan Dresbach of the church's publishing house, and the Rev. Lewis Davis. These gentlemen in turn at their meeting of April 26, 1847, specifically named Rev. Davis to "act as President for the board of Trustees," thus making him (though Otterbein chroniclers have preferred to call him "Principal") the *de facto* first president of the new "University."

How the new leader managed, during these initial years, to turn out so much copy for the church presses is an early marvel. Though burdened with the organization of the school and heading its instruction, Rev. Davis found himself by the first fall named also the "Agent" in charge of financial solicitation. Even so, as the pages of the *Telescope* abundantly show, he found time, energy and exploratory thought during the next several years to write not only extended reports on the new undertaking but numerous well-worked professional exegeses on "Regeneration," debates on "The Church in the Middle Ages," or answers to the denominational conservatives who were attacking the higher education movement as a step toward "priest factories." Rev.

Davis served the College first as organizing "Principal" in 1847-49, then as "President" in two later incumbencies, 1850-57, 1860-71, after which he left to spend his last golden years heading the faculty of Union Biblical Seminary in Dayton. He set a memorable example not only in devoted and effective leadership but in the kind of sensitive, scholarly interpretation of both inner and outer affairs that inevitably demands effective communication through the printed word.

His successor, the pioneering Rev. William Davis, who became Otterbein's "first president" so-called during the year 1849-50, had for years been rarely absent from publication. His articles, letters, reports, travel sketches, memoirs were long familiar to *Telescope* readers. The kind of man he was - this leader who had early taken the church's educational issue to heart - is caught vividly in a sketch he had written for the *Telescope* in April, 1846. With the help of the Lord, he said, he had to date been an itinerant of the U. B. Church for sixteen years, serving much of that time in the new, raw country of the Middle Western Indian border. He had traveled for ministerial purposes 54,200 miles. He had preached ("or tried to") 5,110 sermons and had received "an earthly remuneration" of \$652. After one year at Otterbein, President Davis moved to head another educational venture, Western College in Iowa. Though there is no evidence that the vigorous penman ever gave much immediate substantial leadership either at Otterbein or at Western, he had been one of the earliest ministers in the denomination to feel fundamental needs and to envision potentialities. He probably gave his most valuable service for many years by devoting his constantly resharpened quill to the work of directing his brethren's sympathies toward higher education.

Meanwhile the principal and one-man faculty of the newly opened school, the Rev. William R. Griffith, B.A., a graduate of Indiana Asbury University in Greencastle, had arrived with a goodly backlog of long and scholarly printed articles to his credit. The *Telescope* had recently printed such pieces as "Read the Bible," "The Great Communion," "To the Young Christian Minister," and "The Christian Religion." In spite of the multiplying problems as he very capably set the new institution safely on its feet, Principal Griffith wrote frequently during the next few years. Especially notable were several articles in 1850 dealing with education and reform. No mystic, Griffith took a distinctly modern and rationalistic stand in most discussions. On

one occasion, for example, he entered into an extended exposition on "Justification, Regeneration, Sanctification," which called out a long, dissenting reply from President Lewis Davis. Otterbein's first faculty was finding the time to express itself in balanced, deeply contemplative, publishable debate. The example has not always been emulated in later decades.

The most prolific penman in this first college family, however, was the Rev. William Hanby. A licensed preacher since 1831, a pioneer circuit rider, a founder of *The Religious Telescope* at Circleville in 1834, editor and manager from 1839 to 1845 and again in 1849, now a bishop, Rev. Hanby had served on the founding committee for the college and was a first trustee. By 1853, he had moved his family to Westerville, where for several years he took over much of the business management of the school. Though a self-taught journalist, Hanby wrote with vigor and effect. As editor, he fought continuously and hard in many causes, including that of higher education. In 1845 when he relinquished his editorial desk to David Edwards, he still found time in his endless travels as bishop to contribute a weekly report, travel sketch, letter or extended article. It was little wonder that the son of this writing-editing-publishing father, Benjamin Russel Hanby, would soon be starting the tradition of creative writing, journalism, and songwriting among the students of the new school — with the *Telescope*, of course, as their immediate outlet.

Though it is obvious that a "publish or perish" need motivated some of these early columns from Otterbein's faculty and administrators, there was much more. Founders of an institution of higher learning have something to say to the world as well as to their local constituency — or should have — and they must be able to say it well in readable print. That there were things to say at Otterbein was increasingly apparent when by the Fifties most of the small faculty appeared as contributors to *Unity Magazine*, the United Brethren denomination's newly projected general monthly. Begun in 1853 by Bishop David Edwards, then in charge of the church's Sabbath-School periodicals, *Unity* was at first heavily devotional but in 1857 under the editorship of the Rev. Alexander Owen changed immediately into a family magazine of high intellectual appeal. Rev. Owen was currently president of Mount Pleasant College, Otterbein's slightly younger sister in Pennsylvania, and would continue there until that institution's transfer to Otterbein in 1858 when the Rev. Mr.

Owen would succeed the Rev. Lewis Davis as president at Westerville from 1858 to 1860.

Editor Owen immediately engaged a group of "Special contributors of talent and piety," *Unity* announced. Rev. Owen himself set a high standard with articles in church history and biography. From the Otterbein faculty Rev. Lewis Davis wrote on "The Education of Women" and "Literature." Miss Sylvia Carpenter, first principal of the Ladies Department, who had recently become the wife of John Haywood, professor of science, contributed on a variety of topics ranging from "Wealth" and "Niagara Falls" to "Reflections on Astronomy" (which happened to be her husband's most engrossing interest). Her successor as principal, Miss M. L. Gilbert, wrote on "Progress in Missions." Young Henry Garst of the Class of '61 - later to serve his alma mater for many years as teacher, president and historian - was already writing prolifically, contributing articles to *Unity* on missions, Harriet Beecher Stowe, and various devotional subjects. Henry A. Thompson, a recent graduate of Washington and Jefferson College, who would be a future teacher and president at Otterbein, was writing short stories and articles. *Unity Magazine* closed, however, in January, 1859, and with it the college's first vigorous decade of faculty writing.

After the difficult and discouraging Sixties, a second chapter opened in January, 1876, with the appearance of the college's first campus-sponsored journal, *The Otterbein Dial*. This was a monthly published by members of the administration and teaching staff, with John E. Guitner, professor of Greek, the managing editor, and Thomas McFadden, professor of natural science, the publisher. The faculty were to be "Editorial Contributors" under a motto from Tennyson: "I may measure time by yon slow light and this high dial." The subscription price was one dollar.

Such a project had been long in the dreaming. As early as 1852 the Board of Trustees had heartily recommended the starting of a college magazine. Again in 1864, they approved such a recommendation, the first issue to be executed when 2,000 advance subscribers had been obtained. Now in 1876, the historic venture finally came to pass with the Rev. Henry A. Thompson, doubtless, a prime stimulus.

Rev. Thompson, who had come to Otterbein in 1862 as professor of mathematics and natural sciences, had been named president in 1872. After the long frustrations of the Civil War period, the little college with President Thompson's vision and boundless energy at the helm was again beginning to move ahead enthusiastically. Writing had long been a regular pursuit with him. Now in 1876, he led off the *Dial* with six major articles including "The Church and the College," "A Brief History of Otterbein College," and "Who Should Enter College?" He had a very busy year, for in addition to his writing and presidency he served as chairman of the National Prohibition Convention on May 17-18 in Cleveland (he would be the party's candidate for vice president in 1880), attended Harvard commencement and represented Otterbein at the Philadelphia Exposition.

Editor Guitner, who opened with a piece on "The Marking System" (he advocated the abolition of grades), appears to have composed most of the twenty main editorials. John Haywood, who had started Otterbein's natural science department in 1851 and had become the Dresbach Professor of Mathematics in 1871, contributed twelve articles beginning with "Can We by Searching Find God?" The Rev. Henry Garst, who had joined the faculty in 1869 and was now Flickinger professor of Latin, wrote six pieces mainly concerned with church-college policies. Professor McFadden, in addition to his publishing duties, contributed several articles including a delightful personal travel sketch, "All Roads Lead to London." His son, Louis H. McFadden, a graduate of 1874, headed an "Alumni Department," which was taken over, when he left in September for a chair of natural sciences at Lebanon Valley College, by Miss Lizzie Hanby. Various alumni and the pastor of the college church, Rev. J. S. Mills, also appeared in the 20-page folio.

Though faculty sponsored, the *Dial* included an "Undergraduate Department" with a pot-pourri of personals. A few student compositions were printed, but always "By Faculty Request." Poetry came chiefly from D. N. Howe '76 ("Fort Ancient," "The Old Log School House," "The Calf in the Chapel") and Edmund S. Lorenz. Lorenz would become the founder of the Lorenz music publishing house in Dayton and a future composer richly significant in the history of American church music. At the moment he was turning out sonnets, attending a music academy in Xenia between terms at Otterbein, and editing his second collection of Sabbath School songs, *Songs*

of the Cross, Dayton, 1876. It is a pleasant passing note that from the pens of J. M. Bever and Lorenz, the *Dial* printed in July, 1876, the first recorded Otterbein song – “Hymn to O. U.,” sung to the tune of “America.”

Files of this first faculty-sponsored journal provide, of course, a major source for local Westerville history. Many details of campus and community background appear – the muddy streets, a lecture by visiting humorist “Josh Billings,” the annoying “bogus” programs printed and circulated by jokesters (approaching the scurrilous), the boarding clubs (“Agassiz,” “Baltimore,” and “College Avenue”), local advertisers, the Westerville *Banner* fire of October 27, other public events and personals.

Though each issue carried four pages of advertising, the *Dial* succumbed in December, 1876, for lack of sufficient financial support to afford a paid editor. Professor Haywood bade the project farewell with a plea to the Trustees to create a department of journalism and to back a college weekly or monthly.

Four years later, the effort to establish a local journal was revived in *The Otterbein Record*. This 16-page quarto appeared in September, 1880, and managed to stay alive for five years, sponsored by the Philophronean Literary Society. As in most progressive American colleges of the period, literary societies, two men’s and two ladies’, were now providing at Otterbein the basic structure for practically all social and cultural activity outside classroom and church. Not only students, but faculty and their wives belonged. Though the *Record* was largely devoted from the first to student and alumni news and contributions, it was edited by the local pastor Rev. J. S. Mills and later by Professor John E. Guitner. It was open freely to all faculty and administrative contributions.

The first issue bore a full-page cover-cut of the 8-year-old main building (now Towers Hall) as a symbol of the college where, it was announced among other virtues, one hundred fifty dollars would “enable one to spend a year respectably.” President Thompson’s lead article was a ringing “What Shall I DO?” Various student-written articles, editorials, personals, locals and humor, together with neighborhood and Columbus advertising followed. There were associate editors from the four literary societies. Editor Mills, who was closing a six-year pastorate in the college church (his last) and who was going into

administrative work with the denomination, owned the property at 54 College Avenue where he had moved back an old frame house and completed in 1881 the handsome brick residence still standing, owned for a time in later years by the "Country Club" fraternity. He would soon be called to Western College, first as professor and later as president.

Among the faculty scribes, President Thompson set a regular and distinguished pace that few could follow, his monthly articles coming to something of a climax in a series of travel letters written from Ireland, Scotland, the continent, Egypt and the Holy Land through 1881. Of his many experiences, one of the most vividly reported was an interview in Athens with the famed archaeologist Heinrich Schliemann, discoverer of the ruins of Troy and the treasures of Mycenae, at the moment residing with his Greek wife in Athens.

Professors Garst, Haywood and Guitner, with E. L. Shuey, Principal of the Preparatory Division, contributed often. Miss Laura Resler, instructor in voice-culture 1880-82, wrote a delightful account of a call upon Henry Wadsworth Longfellow in Cambridge and, after her marriage to the Rev. I. A. Loos, sent back travel sketches during her husband's two-year study in Europe. Careful scholarship in a purely literary vein was represented in the work of the Rev. W. J. Zuck who arrived from Lebanon Valley in 1884 as professor of English and history, to serve as librarian on the side. The *Record* had printed his article on "The Use of Libraries" in 1882 and now in its last year began a series of well-polished papers on "The Venerable Bede," "Chaucer - The Story-Teller" and "The First English Novel," part of an ambitious "Mosaics of Literature" series that was unfortunately cut short by the monthly's demise in 1885.

The *Record* is especially rich in campus and Westerville reflections: lecturers such as A. W. Tourgee, the novelist; personals such as those concerning Henry Clay Frick who "when a member of this school was a poor boy but . . . is now the most extensive coke manufacturer in Pennsylvania . . . goes by the title 'Coke King' " (October, 1881); or the current fad of the literary societies to elect famous personages to honorary membership. When President Garfield was assassinated in September, 1881, several fellow Philophroneans attended his funeral. Campus poet E. B. Grimes wrote a memorial upon the

death of the popular novelist J. G. Holland, another Philophronean honorary. When the beloved Longfellow died in March, 1882, Grimes sent a copy of his poetic tribute to the family and received a letter of appreciation from the author's daughter.

Toward the close, it is noticeable that the *Record* had become less and less a faculty vehicle. One gets the feeling that the small teaching corps now caring for the multiplying interests and needs of ninety students and a total enrollment of 231 in all departments (1882) were beginning to enjoy fewer hours for creative personal reflection and especially for the long, lonely work demanded by publishable composition. The problem would rarely diminish during the next half century.

From 1885 until the advent of *The Otterbein Miscellany* eighty years later, no faculty-sponsored publication would appear again at Otterbein.

In the spring of 1890, *The Otterbein Aegis* was launched. This 16-page quarto, published by a stock company of Philophroneans, eventually ran for twenty-six years, entirely under student management. Though its ten issues a year were dominated by campus and alumni news, student editorials, essays and occasional poetry, with lead articles mostly from distinguished alumni, the faculty were urged to contribute and occasionally did, sometimes very well. But for a stretch of more than a quarter century, the record of their writing in the *Aegis* grows conspicuously thinner. Mostly it is a printing of executive addresses and reports from Presidents Bowersox, Sanders, Scott, Bookwalter and Clippinger. Or — especially during the Semi-Centennial in 1897 — a spate of reminiscence. Sometimes, as the college grew, the inevitable advertising by departmental pitchmen for the competing attractions in rapidly expanding teaching areas. These last reached a worthy plateau of up-to-date statement between 1907 and 1915 in articles by Edwin Barlow Evans (speech and debate), W. O. Mills (physical science), A. P. Rosselot (modern language), Frank E. Miller (mathematics), N. E. Cornet (classics), G. G. Grabill (Davis Conservatory of Music), E. A. Jones (Bible history and education), R. F. Martin (physical education), E. W. E. Schear (natural science), and Charles Snavely (political science).

The faculty's highest *Aegis* moments were mainly in the first

volume, 1890-91. Miss Josephine Johnson, professor of modern languages currently studying in Germany, contributed three articles on German life and affairs. Dr. George Scott from his European travels recorded vivid reports from the Near East and Greece. Professor Zuck, who virtually founded a modern English Department at Otterbein, wrote on "Anglo-Saxon in American Colleges," and his fine scholarship would appear several more times before his retirement in 1904 to become college pastor at Lebanon Valley. In 1898, he published a "new and comprehensive" edition of *The Book of Job*. His most vital writing influence can be seen, however, in the scores of student papers that for two decades provided most of the *Aegis'* more solid filler.

Another contributor to this first volume was Professor Louis H. McFadden (physics and chemistry), who wrote on "Night Lights." Later he would pen various well-done pieces such as "Science Teaching in Smaller Colleges" (1893), "The Jumping Bean" (1894) and "Our Standard Measures" (1902).

Miss Florence M. Cronise (professor of modern languages) wrote on "Switzerland and the Swiss." In September, 1891, she published her first book, a translation of *The Princess Ilse* from the German, illustrated by J. E. Bundy, director of art at Earlham. Later Miss Cronise would turn to a devoted life of missionary service in Sierra Leone, where in 1913 she would produce one of the first collections of West African folktales, *Cunnie Rabbit and Other Beef, or African Folk Lore* (1914).

The *Aegis'* memorable first volume also happened to include one student-produced paper from Otterbein that has since been reprinted as a standard reference – "Notes on Ohio Batrachians" by E. V. Wilcox, Class of '90, who since graduation had joined the staff of the Ohio Agricultural Experiment Station.

The most conspicuous faculty names in the *Aegis'* pages are, however, Garst, Haywood and Sanders. The first two were from the older and long-practiced group – that giant race before the flood of multiplying complexities that were engulfing the modern college. Professor Henry Garst who had become professor of Latin in 1869 and would serve in many capacities including that of president, had turned more and more to historical sketches in his latter years and would finally in 1907 publish the first comprehensive history of Otterbein College. Professor John

Haywood, staff member since 1851, produced throughout his long career numerous monographs and articles from his various teaching and research interests, especially in physics, mathematics and astronomy. Reminiscences and reports from his old-age hobby, the stars, appear occasionally in the *Aegis* down to his death in 1906.

The most deep-going and comprehensive thinking came from Dr. Thomas J. Sanders, Class of '78, who had succeeded to the presidency in 1891, then after 1901 continued as professor of philosophy. Beginning with his inaugural address of June, 1892, Dr. Sanders' carefully composed speeches to the student body or reports to the Trustees appeared year after year and stand nobly for his great character and depth of mind, which a generation of students and teachers would recall with reverence and affection.

The closing out of the *Aegis* in 1916, to make way for a flock of new-mode, specialized campus publications that the new century seemed to demand, had already been presaged in the appearance of *The Sibyl*, a student-produced college yearbook in 1901. Three news sheets followed, all the result of student enterprise: *The Otterbein Weekly*, 1906, *The Otterbein Review*, 1909-1917, and *The Tan and Cardinal*, 1917 to the present. A growing need for closer and more extensive alumni relationships brought about *The Otterbein Alumni Magazine* (1926-27), *Otterbein Campus Comment* (1927-29), *Otterbein Alumni News* (1929-39), and eventually *Otterbein Towers* (1939 to the present). *Quiz and Quill*, begun in 1917, still continues as the main outlet for the "creative" forms of student writing. Faculty have appeared very rarely in any of these periodicals over the past fifty years.

Indeed, faculty publication either on or off campus occurred infrequently from Otterbein during the opening decades of the century. As in many another small liberal arts college across America the new age had brought a host of shifting complexities that left little time for either the kind of exploratory thinking or the degree of effort that distinctive contemplation, research and report demand. Authorship is a very lonely experience in the best of times. In the worst, the world of outer affairs crowds so hard that there is not even the chance for that kind of loneliness.

President Walter G. Clippinger, who came to his long and

distinguished leadership in 1909 was himself an accomplished author. He had spent a year with Dodd, Mead Co., Publishers, in New York and two and a half more with the United Brethren Publishing House in Dayton as superintendent of their book department. Through the years he was to give his pen and fine scholarship richly and forcefully to the college's church and professional relationships. But his task at Otterbein was to lead a dedicated staff through a generation of changes which demanded that prime resources of mind and spirit go to meet the challenges of changing conditions brought about by World War I, the inflated Twenties, the devastated Thirties, and the looming catastrophe of World War II. Academic climates, always shifting, were notoriously fickle during the Twenties and Thirties. At Otterbein they were to be remembered far more, from a faculty point of view, for the courage and creative insights with which the campus met problems of finance, physical plant, curriculum, accreditation, classroom effectiveness, and public relations, than for any extent of distinctive scholarly output.

Otterbein was far from unique in this regard, of course. It was an unbalanced era in the academic ecology of many schools. And there were dangers. One of them is suggested by the fact that as late as the mid-Forties a new faculty arrival at Otterbein was surprised to find himself editing a wholly unfamiliar annual *Catalogue* during his first Christmas holiday. The reason for the unexpected request? It was known, he was told, that he "liked to write."

The Fifties, in contrast, brought a marked change in the writing temper. Though very difficult years of scant means, very heavy teaching loads and looming problems of transition, they brought from many areas of the college an unprecedented outburst of published expression, much of it widely recognized both in professional circles and by the general reading public. Happily, a worthy respect for this side of faculty obligations has continued into the far-more-affluent and opportunity-fringed Sixties.

CONTRIBUTORS

In the photography of Dr. Frederic R. Bamforth, Professor Emeritus of Mathematics, both scientific precision and the fine arts come together in a memorable collaboration.

Lyrics and translations by James Carr, Assistant Professor of Modern Languages, have appeared in several issues of the *Miscellany*. He contributes this year from the University of Strasbourg, France.

Rev. Robert G. Clarke, Director of Religious Activities and Instructor in Government, is author of an article, "Listening: A Mode for the Campus Chaplain," in the September-October, 1969, issue of *President's Bulletin Board*, higher education publication of the United Methodist Church.

Earlier articles by Assistant Professor William T. Hamilton, Acting Chairman of the English Department, appeared in the 1965 and 1969 issues of the *Miscellany*.

Since 1963, Dr. Michael S. Herschler, Associate Professor of Life Science, has published five extended research reports from his studies in genetics. These have appeared in *Cytogenetics* and *The Journal of Dairy Science*.

Dr. Robert Price's account of the *Miscellany's* heritage is portion of a longer history of authorship and publishing in the campus and Westerville community.

Associate Professor of English James K. Ray is the author of "Proverbs and Proverbial Allusions in the Works of Marlowe," in *Modern Language Notes* of June, 1935.

Assistant Professor of Modern Languages Sylvia Vance published a study of Robbe-Grillet in the 1967 *Miscellany*.

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