A DESCRIPTIVE STUDY OF THE DEPARTMENT OF MEDICAL PHOTOGRAPHY AT LUTHERAN HOSPITAL, LA CROSSE, WISCONSIN

A Seminar Paper

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ABSTRACT

The study was made of the medical photography department at Lutheran Hospital, La Crosse, Wisconsin in order to determine its purposes and functions. Literature pertaining to various aspects of medical photography in general was perused in order to gain a working knowledge of the field and to provide background for a better understanding of the department at Lutheran Hospital.

Information for the report was gathered in several different ways. Readers' guides such as the Index Medicus and Biological Abstracts were consulted to determine the location of literature commensurate with this study. Much of the relevant written material was located in the publication of the Biological Photographic Association--Journal of the Biological Photographic Association. The rest of the information for the study was procured through observation of and discussion with the medical photography department members at Lutheran Hospital.

In order to obtain a better picture of medical photography as a professional field, information was sought regarding the foundations on which the profession is built. Such study included early history stemming from even earlier times which saw attempts to illustrate the human body and its functions.

Because of the growing demand for medical photographers, efforts are being made to provide better and more easily obtainable training. The report progressed further with a discussion of training in the medical photography field, showing the various ways in

which the individuals involved acquire what they need to know and understand as competent professionals. Some schools along with their ideas on educating people for the field were also discussed.

By examining the legal aspects, it was found that necessary precautions must be taken by the medical photographer and his employer. A chapter was devoted to the law regarding medical photography.

Study revealed that medical photography is in the process of attaining an organized professional status through a two-fold communication process--first, communicating through its photographic productions and second, by communicating and dispersing information about its production techniques.

TABLE OF CONTENTS

	Page
List of Figures	vii
CHAPTER	
I Introduction	1
THE PROBLEM	2
Statement of the Problem	2
Importance of the Study	2
DEFINITION OF TERMS USED	2
Aquatint	2
Daguerreotype	3
Half-tone	3
Mezzotint	3
Photomicrograph	4
Stipple Engraving	4
Surface Printing	4
ORGANIZATION OF THE REMAINDER OF THE STUDY	5
II HISTORY	6
III TRAINING, SCHOOLS, AND PROFESSIONAL ORGANIZATION	11
IV THE LEGAL ASPECTS OF MEDICAL PHOTOGRAPHY	20
V THE PHOTOGRAPHY DEPARTMENT AT LUTHERAN HOSPITAL	25
PURPOSES	25
Teaching	25
Conferences	26
Public Relations	26

Page

CHAPTER

Lawsuits 27
The Doctor's Protection 27
Autopsies. 27
Pathology. 27
Displays and Exhibits. 28
Portraiture 28
DEPARTMENTAL MANAGEMENT. 28
Scheduling Problems 29
Work Load. 29
Filing System 30
COMMUNICATION FACTORS 30
EQUIPMENT AND TECHNIQUES 32
VI SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS 35
SUMMARY 35
CONCLUSIONS. 35
RECOMMENDATIONS 36
BIBLIOGRAPHY 39
A. BOOKS 39
B. PERIODICALS. 39
C. UNPUBLISHED WORKS. 40

LIST OF FIGURES

Figure — Page

FACSIMILE OF AUTHORIZATION FORM USED AT LUTHERAN HOSPITAL . . . 24

CHAPTER I

INTRODUCTION

Within the last few years the field of medical photography has moved rapidly toward the establishment of itself as a field of professional status. As the science of medicine has expanded so has medical photography. The medical photographer has found that he must acquire skills and knowledge in such diverse fields as carpentry and human anatomy as well as photography. The urgent needs of medicine have forced the medical photographer to develop a resourcefulness and imagination capable of meeting these demands.

This study took a closer look at one such medical photography department located at Lutheran Hospital in La Crosse, Wisconsin. This department is deeply involved in medical progress and discovery. The department members possess qualifications of very high caliber as confirmed by the results of their work. Mr. Joseph N. Tiedt, the department head, has been involved with photography since he was seventeen years old. At the time this study was conducted, he had served in the capacity of a professional medical photographer for twenty-two years. He is a member of the Biological Photographic Association and has attained world-wide recognition for his outstanding photographic achievements in the biomedical category. His writings and pictures have been published in various journals.

Mr. Larry La Scure, the other medical photographer on the department staff, is also a member of the Biological Photographic

Association. He has gained recognition at a national level for his work.

THE PROBLEM

Statement of the Problem

The problem was to report on the purpose and use of the medical photography department at Lutheran Hospital, La Crosse, Wisconsin, and to gather background information on the subject in order to become familiarized with medical photography as a field and choice of profession.

Importance of the Study

Medical photography is a profession which is becoming larger and more complex. As people in all branches of the medical field are realizing the importance and potential of medical photography, their demands for photographic services are becoming louder and more widely scattered. The department of medical photography is no longer photography alone but is calling for many aspects and facets of the audiovisual field. The medical photographer is fast-becoming an audiovisual technologist as well. The field seems to offer an opportunity to a person who is interested in audiovisual media and would be willing to accumulate some specialized knowledge and understanding in photography, science, and medicine.

DEFINITION OF TERMS USED

Aquatint

Aquatint is a tone process rather than a line method, but

it is admirably adapted to the rendering of transparent effects, such as watercolour gives. It is basically a form of etching, using porous ground which the acid can penetrate to form hundreds of tiny dots.[1]

Daguerreotype

An early photographic process with the impression made on a light-sensitive silver-coated metallic plate and developed by mercury vapor.[2]

Half-tone

A picture in which the gradations of light are obtained by the relative darkness and density of tiny dots produced by photographing the subject through a fine screen.[3]

Mezzotint

The plate is first covered with a mesh of small burred dots, made by a toothed chisel-like 'rocker'. In this state the plate would print as a solid, rich black. The half-tones and lights are obtained by scraping off the burr with a scraper, or polishing the plate smooth again with a burnisher so that the ink may be wiped off the highest lights. The technique is rarely practiced now.

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[1]Peter Murray and Linda Murray, A Dictionary of Art and Artists (Baltimore, Maryland: Penguin Books, 1959)

[2]The American Heritage Dictionary of the English Language (Boston: American Heritage Publishing Co., Inc., 1969)

[3]Ibid.

as photographic methods have superseded it for reproductive purposes.[4]

Photomicrograph

A photograph made through a microscope.[5]

Stipple Engraving

Stipple and crayon-engraving were popular Eighteenth century techniques, especially for the reproduction of portrait drawings. The effect is like soft-ground etching and is obtained by a combination of etching and engraving techniques, by stippling dots over a grounded plate with the point of an etching needle or a special tool giving a chalk grain, or by flicking the surface of the plate with the graver.[6]

Surface Printing

The one major process which involves no cutting into the block or plate, and therefore no 'engraving' in the proper sense, is lithography, usually executed on a thick slab of stone, although zinc is now more common as it is lighter and less fragile. The whole technique, invented in 1798 by Alois Senefelder, is based on the fact that water runs off a greasy surface. The design is drawn or painted on the stone with a greasy chalk and then the stone is wetted. When the greasy ink is rolled on the stone it will not take on the wet parts but it sticks on the parts which are already greasy, off

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[4]Murray, loc. cit.

[5]American Heritage, loc. cit.

[6]Murray, loc. cit.

which the water ran. . . . Its great advantage is that there is almost no limit to the number of prints it is possible to take.[7]

ORGANIZATION OF THE REMAINDER OF THE STUDY

The remainder of the paper is as follows: Chapter II gives an account of the history of medical photography as it evolved from earlier medical illustration techniques. Chapter III describes training techniques and methods of acquiring the necessary background in order to serve as a competent medical photographer. Schools and the philosophies guiding their method of education are also reviewed. In addition, this chapter looks at the professional organization of the field. Chapter IV discusses the legal aspects of medical photography. Chapter V is a description of the medical photography department at Lutheran Hospital, La Crosse, Wisconsin and covers its purposes, departmental organization, communication problems and factors, and equipment and techniques. Chapter VI gives a summary of the study and the conclusions and recommendations of the writer.

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[7]Murray, loc. cit.

CHAPTER II

HISTORY

Medical photography originated in a very small way in commercial studios. Occasionally a photographer was called upon to record certain aspects of work a doctor was pursuing. On other occasions such services of a professional photographer illustrated the before and after results of medical treatment or surgery. Such photographs were frequently used for illustrating articles which appeared in medical journals.[1]

In the days when photography was a relatively simple matter, the doctors themselves often took pictures as they progressed through a procedure or operation. In the cases where their ability with a camera was limited, the local commercial photographer came to the doctor's aid.[2]

An important use of the photographic principle at this time was the production of slides which were used as supplementary illustrative materials at lectures, conventions, and meetings.

As time went on, medical photography gradually grew into an interest for commercial studios which began advertising their "specialization" and extended capacity to render photographs in the medical field. Photography became more and more involved in the medical field

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[1]Charles Abel, Photography: Careers and Opportunities for You (Philadelphia: Chilton, 1961), pp. 99-101.

[2]Ibid.

as it became a tool for advancing medical research. At this point, it became too expensive and impractical for doctors and physicians to call upon a professional photographer who had to come from outside the medical environment; thus the medical photographer finally came into his own. The production of specialized equipment soon followed along with development of specialized papers and films allowing for the adaptations necessary in the new medical environment.[3]

The idea of medical illustration did not start with photography but extends back through history to the cave paintings and Arab and Egyptian manuscripts. Later on as the printed book came into popular use, illustrations were printed utilizing the wood block. Great skill was demanded of the draftsman as the use of color was limited.[4]

Most early medical illustration was concerned with anatomy. Clinical pictures were virtually unknown. Such anatomical illustration was greatly hampered as religion frowned upon such things as dissection of the human body. The interested and concerned researchers of the day persevered in their attempts which led to such ends as studying victims of execution. As a result, osteology (the study of bones) was a much better treated subject as the soft parts of the body were subject to decay.[5]

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[3]Ibid.

[4]Robert Ollerenshaw, "Medical Illustration--The Impact of Photography on its History," Journal of the Biological Photographic Association, XXXVI, 1 (February, 1968), 3-13.

[5]Ibid.

The late Fifteenth century saw a blossoming of excellent draftsmanship and a variety of publications. Some of the artists involved with anatomical and physiological illustration were Johannes de Kethan, Leonardo da Vinci, Marc° Antonio de la Torre, Durer, and Michelangelo. Attempts at genuine anatomical drawings were few and many times, what was not understood was covered by heavy shading and overlavish labeling.[6]

As the first few decades of the Sixteenth century arrived, so did the work of Vesalius and Jan van Calcar in their publication in 1543 of the Fabrica. Their pictures were not only accurate within the knowledge of their day, but also artistic which led to the belief at one time that the work was of the artist Titian.[7]

At the beginning of the Seventeenth century, engraving of various forms gradually replaced wood--copper being a principal medium. Some of the illustrators of the time were aided by architects. In 1733, William Cheselden published his Osteographia which, on the title page, contained an excellent representation and description of the camera obsucra, probably the first medical reference to the instrument.[8]

An astounding breakthrough in the Mid-Eighteenth century was when de Blon and his assistant Gautier d'Agoty introduced a a system of three-color printing by a process called mezzotint. De Blon made the plates for the Myologie of Duverney in 1745. The Mezzotint process was very difficult and was not a success commercially and, as a result, fell into disuse.[9]

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[6] Ibid. [7] Ibid. [8] Ibid. [9] Ibid.

In 1791, Alois Senefelder discovered the process of lithography and the potentialities were quickly realized by medical illustrators. Other processes which became available were the aquatint and stipple engraving. The first half of the Eighteenth century displayed numerous examples of the many choices of processes. Sir Robert Carswell (1833), a doctor, took lithographic stones into the autopsy room and recorded his own findings directly.[10]

The year 1839 initiated a setback in the fast-advancing progress of medical illustration. The discovery of photography made it suddenly too easy to make a picture. Good taste suffered for technical facility, especially in the relatively new field of clinical recording by the photographic process. Examples totally lacking any artistic sensibility were multifarious.[11]

The all-seeing eye of the camera was uncontrollable, giving graphic artists their cause for superiority, but the artistic sensitivity was counterbalanced by technical innovation. The first paper on medical photography was written in 1855 by H. W. Berend of Berlin and appeared in the Wiener Medizinischer Wochenschrift. The publication led to the discovery that photography was already in use for some time at the Orthopaedic Institute in Vienna. Innovation led to more innovation and techniques led to newer and better techniques. In the decade of 1880, the Nouvelle Iconographie de Saltpêtrière published the work of the first medical photographic department in the world, set up in that hospital by Jean Martin Charcot.[12]

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[10] Ibid. [11] Ibid. [12] Ibid.

CHAPTER III

TRAINING, SCHOOLS, AND PROFESSIONAL ORGANIZATION

The field generally thought of as medical photography is more commonly referred to by its practitioners as medical and biological photography. The Biological Photographic Association is the official organization of these individuals and the Association's publication is the Journal of the Biological Photographic Association.[1]

The Biological Photographic Association is the only organization on the North American continent intimately concerned with the future of biological photographers and their photography.[2] The Biological Photographic Association was founded at Yale University in 1931 by a group of scientific photographers interested in providing a forum for the dissemination of information on methods, techniques, materials, and instrumentation as applied to scientific research and teaching. The Biological Photographic Association has established and maintains a Board of Registry for the purpose of examining and certifying qualified scientific photographers. The aim is to raise standards and provide criteria for those interested in employing qualified scientific photographers.[3]

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[1]Charles Abel, Photography: Careers and Opportunities for You (Philadelphia: Chilton, 1961), p. 99.

[2]Stanley Klosevych, "In Black and White," Journal of the Biological Photographic Association, XXXVIII, 2 (April, 1970), 45.

[3]"Statement of the Purpose and Program of the Biological Photographic Association," Journal of the Biological Photographic Association, XXXVIII, 1 (January, 1969), 4.

The Biological Photographic Association has stated that it is "dedicated to the study and improvement of photographic science as applied to all things that live or have lived."[4]

The Biological Photographic Association has carried much of the responsibility for training persons in the biomedical photography field because of the scarcity of training programs, both in the United States and Canada. The three basic types of training advocated by the organization are the apprenticeship, the formal training program, and activities at the annual Biological Photographic Association conventions which take form as workshops, lectures, and demonstrations.

The apprentice system shows advantages in that a student will have learned skills under the guidance of one of the organization's experienced biophotographers. Usually definite curricula are followed and periodic examinations given. Limitations ensue as the biophotographer must budget his own time and emphasize the work commensurate with needs of the institution in which he is employed.

Formal training, although unable to provide the invaluable experience gained in on-the-job training, can cover all the courses required for registration.

As registration examinations were initiated, it was discovered that too many biophotographers needed more training to qualify for registration. As a result, short refresher courses were organized as a stop-gap measure. In 1966 a program of formal education was

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[4]Percy W. Brooks, "A Report on Educational Programs in Biophotography Sponsored by the Biological Photographic Association," Journal of the Biological Photographic Association, XXXVIII, 4 (October, 1970), 179.

started by the Committee on Education of the New York Chapter. This, having been spurred by workshop courses offered by the parent organization at Lexington, Kentucky in 1966, led to preliminary workshops preceding other conventions in years following. In 1970, the Biological Photographic Association Professional Education Committee planned a biomedical photography course of study at Rochester Institute of Technology in Rochester, New York. The Institute was chosen by the Biological Photographic Association as they believed the location provided the best facilities for any photographic course.[5]

Conclusions drawn from a recent survey conducted by the Board of Registry of the Biological Photographic Association in conjunction with the director of the Rochester Institute of Technology's proposed Biomedical Photography Program indicated that the field of biophotography is facing an enormous period of expansion. Another revealing point was the indication that present membership in the Biological Photographic Association consists of older individuals. This point suggested a need for recruitment of new entrants into the field. A third revealing discovery was that the educational level had no bearing on the salary which further indicated that biophotography has not, at least in the past, been a field regarded by the employing institution as requiring a formal education. This last was a point held in contrast by members of the Biological Photographic Association who have recognized the need for their own continuing training.[6]

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[5]Ibid., pp. 179-82.

[6]John F. Trauger and Robert F. Sponholz, "Survey of Biophotography: Results of Jointly Sponsored Survey by BPA Board of Registry and Rochester Institute of Technology," Journal of the Biological Photographic Association, XXXVIII, 1 (January, 1970), 7-11.

Another author has indicated the importance of an expanding education because, for one reason, the profession has been brought into disrepute by sub-professional staff members who had very limited knowledge and no opportunity to broaden their backgrounds. Until recently, there were practically no courses in scientific photography. The field was wide open and institutions had no effective criteria for assessment of prospective employees in the profession. Scientists and medical people were dissatisfied with the so-called photographers and, as a result, did their own photographing. This development reduced the "photographer" to a darkroom technician who, in time saw further elimination of his role with the introduction of Polaroid direct positive equipment. In order to avoid such dilemmas, it has been up to the photographer to maintain his own department and status by reading, studying, attending conferences, and developing a professional attitude. Recently introduced advanced techniques have offered new applications in research and teaching. The photographer has had to keep himself informed to the minutest detail. Thus, it has become apparent that the medical biological photographer must now have a higher education such as received in a technical school or university.[7] Further verifying this point, John F. Trauger has stated the following:

> Communications departments have outgrown their concern with only the production of audio-visual materials. The communicator must be a full working member of a team which designs curriculum. Audio-visual materials are an integral part of the curriculum not merely an adjunct to it. To be a full partner, he must be skilled in the many ways visual materials are incorporated into

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[7] Stanley Klosevych, "The Scientific Photographer: A New Image," Journal of the Biological Photographic Association, XXXVI, 1 (February, 1968), 39-41.

the learning environment.[8]

Because of the scarcity of formal training in the field of biomedical photography, the Biological Photographic Association in conjunction with the Rochester Institute of Technology has tried to set up a system in order to meet the needs of people either in the biomedical photography profession or those interested in pursuing such a course of study. Rochester has initiated an "inside-outside institute" concept in relation to biomedical photography. Such a program, if fully developed, would allow a degree candidate to attend a university near him in order to accumulate the necessary bachelor of science degree requirements in mathematics, biology, and general studies. For the photography, the student would attend Rochester for a one or two-week period for several summers. He would be given exercises to be done at home or in his department by which he would demonstrate his comprehension of the theory and principle of the lecture course.

Eventually, it is hoped that a Master's degree will be able to be offered to graduates from the life sciences disciplines.[9]

By examining the undergraduate catalog for 1970-1971 of the Rochester Institute of Technology, an idea was obtained regarding the course work applicable toward a two-year program for an Associate of Applied Science degree which would prepare a student for a photographic career in the life sciences. Such a degree would offer a

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[8]John F. Trauger, "Biomedical Communications Education: Your Most Important Challenge," Journal of the Biological Photographic Association, XXXIX, 4 (October, 1971), 177.

[9]Ibid., pp. 177-182.

photographer on the allied health teams in hospitals, medical and dental research centers, veterinarian treatment centers, biological and zoological research centers including oceanographic stations and any other situations where life sciences are recorded and studied.

The following is a brief synopsis of courses offered at the Institute as would apply to a course in medical photography. The first year would include courses in basic photography, photographic materials and processes, college math, language and thought, and cellular, animal, and human biology. The summer would involve a quarter of internship in a medical or biological facility. The second year would concentrate on courses in biomedical photography, design and preparation of biomedical visuals, color photography, and general studies. A second summer of internship is recommended.

By taking the above course of study, a student would qualify for membership in the Biological Photographic Association and could become a Registered Biological Photographer.[10]

As stated earlier in this chapter, it has been the desire of the Institute and the Biological Photographic Association to establish the proper criteria for a Bachelor of Science degree. A third and fourth year program has been proposed in order that such a degree could, in fact, be pursued. Courses which would be offered would be filmmaking for one or two years, television production and directing, audiovisual technology as multi-media, medicine and biology exploring special interest areas, management concerning personnel and administrative

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[10]"Rochester Institute of Technology Official Bulletin: Undergraduate Catalog, 1970-71," LXX, 2 (May, 1970), 112-13.

writing including selling and promotion, script writing, dramatics, public speaking, computer technology, and educational theory as the learning process.[11]

John Trauger has stated the philosophy enveloping the objectives and reasons for the educational approaches as applied to the curricula at the Rochester Institute of Technology, Biomedical Photography Department. His ideas are as follows:

> Theoretical and technical education is most realistic when it relates to relevant work experiences. At the present time it is impractical to have RIT students working in one of the hospitals of the Rochester area during the academic part of the year. The difficulty in scheduling adequate and efficient work periods for on-the-job training, the cost of staffing at the institutions, the feeling on the part of the hospital or university staffs that students should have preparation before they work with patients, and other considerations have governed our thinking. We feel that a full working unit of experience during the summer quarter would be more realistic and desirable.[12]

By being gainfully employed during such a summer session, whether the department would be diversified or highly specialized, it was felt that the most important aspect of the students' experience at this point was association with a department supervisor of very high quality and philosophical approach. These supervisors, some by being members of the Biological Photographic Association and holding the Registered Biological Photographer certification, would represent the approach to education and professional conduct important to the profession.[13]

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[11] Trauger, "Biomedical Communications Education," pp. 180-82.

[12] John F. Trauger, "A Statement on the Internship Program in the Biomedical Curriculum," Journal of the Biological Photographic Association, XXXVIII, 4, (October, 1970), 183.

[13] Ibid., pp. 183-84.

In this report, a foremost educational institute in the United States for the field of medical photography--Rochester Institute of Technology--was compared with the London School of Medical Photography, London, England, in order to obtain and illustrate a different philosophy of education in biomedical photography.

The London School of Medical Photography was established in 1952. The school is an association of eight medical establishments which are all in close range of one another. The practicing photographers, teachers, and research workers at these institutions are the council members who conduct the London School of Medical Photography. The foremost member of this council is Peter Hansell who was instrumental in founding the school.

Applicants must take an exam administered by the Institute of Incorporated Photographers. Following the satisfactory completion of the exam, the applicant must then be accepted by the Council.

The school has instituted a course of study by which the student serves on the working staff of each of the eight hospitals. The knowledge and understanding gained through practical experience is felt to be unobtainable in textbooks. The student attends lectures on medical school standards in such subjects as anatomy and physiology. A course consisting of evening lectures pertaining to the theoretical aspects of photography is also considered necessary. The entire program is arranged to suit individual needs and interests. A day-to-day pattern of working conditions lays the foundation for the course outline rather than a syllabus.

The program has been considered successful for several reasons. Firstly, the proximity of the hospitals--all being within one city--has

offered a unique convenience for such a course of study. Secondly, the need for future photographers has unified the medical photography departments in the eight hospitals which further leads to a third and very vital point--that of maintaining an open flow of communication. Fourthly, the high standards have created greater respect for the profession of medical photography by the medical staff in each of the eight hospitals involved.[14]

A possibility in the near future which would be a tremendous boost to the field of medical photography would be the requirement by the Joint Commission on the Accreditation of Hospitals that, to be approved, a hospital would have to establish a department of medical photography.[15]

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[14]Paul Marshall Macapia, "Preparation for Certification: A Study of the London School of Medical Photography," Journal of the Biological Photographic Association, XXXVI, 1 (February, 1968), 29-32.

[15]W. J. Reals, "Medical Photography," Hospital Progress, XLVIII (November, 1967), 53, cited by Sister Ann P. Weibel, "The Use and Resource Areas of Audiovisual Media in Hospitals (unpublished seminar paper, Wisconsin State University - La Crosse, 1971), p. 17.

CHAPTER IV

THE LEGAL ASPECTS OF MEDICAL PHOTOGRAPHY

One of the legal concerns of the medical photographer is that of authorization. Unlike other photographic works, the photographs dealt with in a medical situation illustrate ailments and conditions which could be embarrassing to the subject. Remembering that authorization includes not only the actual taking of the picture but the ability to use it later is vital. Even though the authorization need not be in writing, it is generally preferred in order to provide evidence if needed at a later date.

Authorization forms should include the following information: (1) identification of parties, (2) what is to be done photographically, (3) specification of the area to be photographed, (4) the type of use of the authorized photograph, (5) the data, and (6) the signature of a legally proper person. A book material on the subject entitled Medicolegal Forms with Legal Analysis has been published by the Law Department of the American Medical Association.

Permission is usually granted by the subject himself. Greater care must be taken when dealing with minors, incompetents, and decedents. The parent or legally appointed guardian should sign for a minor. The legally appointed guardian should authorize for an incompetent. Authorization in the case of a decedent should come from the personal representative of the decedent's estate.[1]

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[1] G. Orwall, "The Law and the Photographer," Journal of the Biological Photographic Association, XXXVIII, 2 (April, 1970), 47-57.

When gaining authorization, the idea should be to gain the subject's knowledgeable consent and not just a signature. In many cases, it is possible that a patient does not fully realize the nature of authorization he is granting. The suggestion is that pictures be masked in an attempt to destroy identity and that portions of the body which need not be shown be eliminated.

There should be no legal concern if the subject cannot be identified in the photograph. However, problems may arise if a person is identified by name, initials, address, or if the picture or accompanying text is embarrassing to the patient. The picture which is identifiable is, of course, the major source of potential legal complications.

There are various types of publications and presentations in which identifiable pictures may be used. The greatest legal hazard probably centers around those publications in book form because a book is a source of information which will be around for a long time as opposed to magazines or periodicals which, for the most part, are discarded in time. Momentary unauthorized display such as during a lecture or presentation can be dangerous when attended to by members of the general public. When unauthorized material is for legitimate scientific or medical purposes and when the audience is professional, the likelihood of legal action is minimal, even though technically, it is still an invasion of privacy and an infringement on the individual's rights.[2]

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[2]Ibid.

Release of prints or negatives to lawyers, insurance firms, family members or anyone else must be governed by the same rules applicable to the release of other medical information. The patient's authorization is necessary.

An important factor which enters into a legal situation is not particularly the award of money damages, but, more threateningly, the ensuing result of a marred public image, either of the medical institution itself or of the physician.

Another aspect of the legal angle is that of the photographic involvement in a lawsuit. Some of the main points which must be kept in mind by the photographer are, above all, professional honesty and the idea that a visually represented testimony is necessary for clarity of the issue. Frequently a photograph is used to demonstrate the veracity, or lack of veracity, of a witness. Photographs can be made of exhibits which are too large, or for some other reason, cannot be brought into the courtroom. Such an example could be a photograph of a microscopic finding or some discovery in the pathology lab.

The photographer, as a witness, can serve two purposes. His expert opinion may be asked for regarding a photographic matter or technique which, in turn, usually results in an extensive cross-examination to determine the photographer's qualifications and competency. A second reason for serving as a witness would be to lay the foundation for the introduction of pictures, films, or other visual media.

Gregg Orwall, a source of information for the material in this chapter is a frequent author and speaker on the subject as well

as on medicolegal and civic matters. Since January of 1963, he has been General Counsel, Mayo Clinic, Rochester, Minnesota.[3]

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[3]Ibid.

FIGURE I
FACSIMILE OF AUTHORIZATION FORM USED AT LUTHERAN HOSPITAL

Name Age Room No.
Clinic No. Ordered by Date
Photography to be done at: Studio; Bedside; O. R. Other Location_____

Lesion to be photographed
Site_____
Diagnosis_____
Special Instructions_____

Check One or More: _Black and White _Color; _Motion Picture; _Infra red; _Other_____

Copy for referring physician: Yes No
Charges Yes; No Bill to:_____

CONSENT TO PHOTOGRAPH

The undersigned hereby authorizes or ratifies the LaCrosse Lutheran Hospital and the Gundersen Clinic, their agents or employees, and the attending physician to take photographs and/or motion pictures (or to televise during a surgical or other procedure) while I am a patient in this Hospital or under the care of a physician associated with the Gundersen Clinic, subject to the following conditions:

1. That the name of the patient or the undersigned shall not be used to identify said photographs, motion pictures or television.
2. That said photographs, motion pictures, or television be used only for the purposes of medical study, research or general information.

This consent shall act to expressly release from liability the LaCrosse Lutheran Hospital and the Gundersen Clinic, all employees of the Hospital and Clinic, and the attending physician.

Witness

Patient or person authorized to consent for the patient.

Do Not Write In This Space

GUNDERSEN CLINIC | LUTHERAN HOSPITAL | PHOTOGRAPHY REQUISITION

CHAPTER V

THE PHOTOGRAPHY DEPARTMENT AT LUTHERAN HOSPITAL

The photography department at Lutheran Hospital is supported financially by both the Gundersen Clinic and Lutheran Hospital. Salaries and supplies are funded by Gundersen Clinic whereas equipment and space are provided by Lutheran Hospital. There are advantages as well as disadvantages to such a system. The expense involved in supporting a department so large would be too great for either organization. On the other hand, the presence of two such organizations involves too many channels of communication.

The photographic department is staffed by two biomedical professional photographers, one secretary, and one graphic artist. Approximately thirty different departments within the hospital-clinic complex utilize the services of the photographers and their production.

PURPOSES

The purposes of the photographic service at Lutheran Hospital are varied. Mr. Tiedt, head of the department, stressed that the main purpose for such a service is teaching. Other areas involving photography are conferences, public relations, lawsuits, protection for a doctor, autopsies, pathology, displays, exhibits, and portraiture.

Teaching

Teaching, as was indicated, holds the most importance for the services of the photographer. Doctors utilize visual aids in their

lectures and instruction to interns and other doctors. Doctors make trips to various hospitals in the surrounding area and share their new-found techniques and discoveries with other medical staffs.

Conferences

Doctors within the hospital and clinic often gather to discuss the problems and procedures used in treatment of a particluar patient. Pictures are used to supplement discussion as many times a patient is to ill or unable to be present for discussion or examination by several doctors at once. Conferences are held at which doctors are to make presentations to members of other medical organizations or hospitals. Such presentations oftentimes require more elaborate set-ups, bringing the photography department into valuable use once again.

Public Relations

The photography department at Lutheran Hospital does some work with public relations but has little time and limited equipment to perform such involved tasks. One such film made a few years ago supplied the hospital with a great deal of good public relations with the filming of a situation entitled "Diane Goes to Surgery." This film was designed to be shown to youngsters who had questions about what happens when it is necessary to go to the hospital. By showing the picture in Diane's school to her classmates, the procedure of going to and being in the hospital was not such a mystery any more to the young minds.

Lawsuits

At times, it becomes necessary to bring the truth to a matter involving a patient who has reason to believe that he received improper treatment. Pictures can show that either his claim is valid or unsubstantiated.

The Doctor's Protection

Quite often when a patient is admitted, pictures are taken to document his case as a preventative for possible question and concern at a later date. Such a procedure warrants the taking of pictures before and after surgery and treatment.

Autopsies

Photography of specimens is vital in this area in order to show the actual cause of death.

Pathology

Several reasons are encompassed with the taking of pictures in the pathology department. Firstly, many times such pictures are used to verify or negate a doctor's statements made on a case. This is one of the ways in which the quality of treatment and diagnosis is assured. Secondly, the pathology laboratory offers a doctor conducting a research project to obtain pictures of certain aspects of a disease or characteristics of organic malfunctions. An example is a series of pictures illustrating various diseases of the lung. Each time a specimen comes to the laboratory, it is photographed for the doctor doing his research in that field.

Displays and Exhibits

Work in this area calls into play many facets of the photographer's imagination. Not only does he take the pictures, but he is responsible for presenting them in the most elucidating way. Mr. Tiedt stated that his department is ready and willing to, at any time, make such displays. An example of this type of work is a display constructed to illustrate the causes and rates of farm accidents in the La Crosse area. The display was first used to make local physicians aware of the problem. The display also served as a public relations medium, traveling all over the state and appearing at such functions as Farm Progress Days and 4-H exhibits. A nationwide symposium was held in La Crosse at the university and this display was used in conjunction with a slide series for a presentation given by Dr. Sig Gundersen. At the time this report was made, the display was being used in Green Bay, Wisconsin.

Portraiture.

The portrait photography at the hospital is done on a very simple basis. There are a few backgrounds available and most of the work involves pictures for the doctors and physicians.

DEPARTMENTAL MANAGEMENT

In order to have any degree of efficiency in the department, it is necessary to make the attempt to meet certain standards. Teamwork is a main point, coupled with an open line of communication among the department members. Versatility is another important asset. The photographer in a medical setting must be capable of

handling all situations commensurate with the job even though he is sometimes limited by materials or lack of materials. Imagination is a vital tool necessary for better presentation of the work. Another big point which must be kept in mind is that of uniformity in pictures. This aspect is often hampered by the inability to always use the same location for similar pictures. A patient is not always capable of being transported to the photography studio in which case the photographer must go to the bedside.

Scheduling Problems

A hospital cannot offer a very stable routine or schedule of events as patients do not choose a time and hour to become ill. This factor coupled with a tremendous variety of work which must be handled daily might seem inefficient according to commercial studio standards. The photographer may know a half an hour in advance that he is needed to film in surgery. Doctors who are preparing last-minute presentations for meetings or conferences need work from the photography department immediately.

Work Load

The department work is mainly clinical with a mounting trend toward work in research. Demands made on the photography department by the medical staff increased at a tremendous rate within the past few years. In 1970, the resulting load was twenty-five to thirty thousand units of work (the term unit of work referring to any production such as a 35 mm transparency, a print, a 16 mm film, a diazo transparency, a drawing or chart). In 1971 the load had increased to from fifty thousand to sixty thousand work units. A hypothetical

figure for 1972 was over one-hundred thousand units of work if the demands had maintained the rate set at the beginning of that year.

Filing System

The photography department has a filing system which is unique to the entire hospital. The system is very thorough and serves not only the photography staff but the total staff of the hospital as well. Each photograph or illustration is filed by the patient, the disease or malfunction, and by the surgical procedure.

COMMUNICATION FACTORS

Medical photography involves a wide range of communication problems in Lutheran Hospital's medical photography department as well as in other similar biomedical photography departments. An article written by H. Lou Gibson[1] has laid groundwork for successful communication by discussing some points to strive for.

The first point discussed by Gibson was factors of communication meaning that words and pictures should be planned together and the role of each allocated. Gibson felt that the viewer often needs to be told what to look for.

A second point was that of image factors. Good tone and color quality are essential. Lighting must be revealing and appropriate positioning is imperative. Gibson stated that it is the

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[1]H. Lou Gibson, "The Published Image," Journal of the Biological Photographic Association, XXXVIII, 4, (October, 1970), 149-166.

responsibility of the photographer to make the illustration clear. The photographer should strive to perfect his black and white printing techniques as objects which are normally recognized by color must be distinctly rendered in a black and white print. Such a print calls for good position of the subject as well as proper lighting.

A third point Gibson made involved auxiliary factors. The main subject should often be supplemented with an auxiliary item, but nothing else. Sometimes it is necessary to illustrate a normal situation with the abnormal point of interest for a comparison.

A fourth factor involved psychology. The effects of design and style must be understood. People have learned how to allow for the differences between an object and an image of the object. The image should, nevertheless, depart as little as possible from the object and the departures should be along well-known lines.

Fifthly, Gibson felt that each small element, or bit, should be understandable, sufficient, and lucid.

Lastly, he felt that the attention given each element by the viewer can be superficial or assiduous. This must be gauged by the photographer.[2]

The problems in communication are not limited solely to the satisfactory production of the photographs but involve other aspects as well. Because the photographer knows how to enhance and clarify presentations with his work, there must be a two-way stream of

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[2]Ibid.

communication between photographer and doctor. The doctor knows what it is he wants to say and the photographer has to be prepared to advise the doctor on the best methods of illustrating what has to be said. A further step must be taken on the part of the photographer in that he must take the pains to familiarize himself with medicine and science. Again, communication with the doctor plays a most important part as discussion will broaden the photographer's self-acquired knowledge and understanding of the biomedical field.

EQUIPMENT AND TECHNIQUES

Various types of photographic techniques are employed by the photographers at Lutheran Hospital. The techniques include the following: photomicrography which involves the use of a microscope to photograph microscopic specimens; photomacrography, a procedure requiring the use of special lenses and adaptors for the photographing of macroscopic specimens in order to produce a scaled image; transillumination involving the use of light transferred through a specimen from behind in order to capture an image of internal parts; the photographing of specimens which must remain under water; and use of infrared film, a technique in the experimental stages at the time of this report.

The equipment involved included, at the time, ten 35 mm cameras, two four-by-five Graphics, one four-by-five view camera, and one 16 mm Bolex movie camera. The 35 mm cameras have interchangeable assorted equipment.

The greatest amount (85 to 90 percent) of the work done by the department is closer than the usual range of the camera lens.

The exposures are dependent upon many factors such as the type of filters needed, the magnification, reciprocity factors, the film being used which has been determined by what will happen to it in the darkroom. Calculations for the final product are made before the picture is even shot.

To increase efficiency and save time, equipment is standardized to the greatest possible degree. Pre-planned set-ups can be immediately applied to the particluar situation. Special set-ups must be designed for specific purposes. The imagination and ingenuity of the photographer is constantly on call.

The department is equipped to handle all the black and white photo finishing. Some color processing is done but the bulk of color developing and processing is sent to commercial photographic firms.

When the time arrives to go to the operating room for filming purposes, certain factors must be observed and precautions taken. The first condition of all operating room photography is that the welfare of the patient always comes first. Films must be made without interfering with the surgeon's work. The equipment used must be safe and in accordance with the anesthetic being employed. Modern-day equipment has lessened the danger of a gas explosion as anesthetic gases are contained in a machine and do not escape as the patient exhales. Precautions must still be taken. The photographer must work above a level of five feet as gases which do escape settle to the floor and are concentrated in that range. Flash attachments are never used and strobe lights are never connected in the operating room as with any other equipment.

During a surgical procedure, the filming must be done right the first time as there will not be a second chance. The importance of the photographer's knowledge of medicine and an understanding of the procedure is evident as he must know what it is the doctor wishes to illustrate by the photographs or films. There must be communication and cooperation between the surgeon and the photographer while a procedure is being filmed.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Man, from his earliest beginnings, has sought to learn more about himself and his environment. Medical photography has stemmed from this age-old desire of man's effort to illustrate living organisms--their characteristics, functions, malfunctions, and idiosyncracies.

SUMMARY

The dawning of medical photography was a response to a desire and need for illustrating techniques which could offer a more efficient process. The idea gradually evolved into a field of its own right which, up to modern times, has struggled to become recognized as a service holding professional merit. The biggest factor enveloping the field was found to be effective communication within and about medical photography. In order to become a successful communication medium, it is necessary to be able to effectively communicate about the medium.

CONCLUSIONS

The gathering and sorting of information for this study proved to be an elusive endeavor. What was found was a disorganized smattering of literature and journalistic reporting which all led to an inconclusive picture of the profession. This situation appeared to be indicative of the field itself--a field struggling

to blossom as a fully professional organization of communication techniques. A demand has been felt far and wide for such photographers but the reins are held tight when such a service becomes an actuality. An example of this factor can be illustrated by the lack of commercially-produced equipment which must be specially designed to meet the photographer's needs. He must design and construct his own or do without.

Another struggle of the profession which was observed through this study was that of proper and efficient communication between members of the medical photography field and others either directly or indirectly involved with such a service.

RECOMMENDATIONS

A suggestion was made by Mr. Tiedt that individuals interested in medical photography as a chosen profession be prepared to design and construct their own equipment for specialized photographic procedures. Mr. Tiedt further stated that the demand for standardized equipment has been so small that nothing has been marketed commercially. One such piece of equipment which would be a boon to the service would be a commercially-made camera stand for gross specimen photography.

Through discussion, study, and observation the possibility of universal standardization of certain picture-taking techniques and systems seemed to recommend itself. Such a choice by cooperating photographers everywhere would render their photography a universal language, immediately understood by all others as well as the professional staff in their particular setting.

The material studied for this paper dealt primarily with technique and immediate problems of the medical photography profession. The man, unless he has access to the specialized journals of the medical field, has little opportunity to learn about medical photography and its purposes. Others who knew little or nothing about medical photography and with whom it was discussed displayed a vivid interest in learning more about the field. This point led to the recommendation that further study evolve along these lines and possibly be published if, for no other reason, than to advertise and make known an important tool of medical research and progress. Perhaps such publicity, handled correctly, could lead to better understanding and reception by people who, at some time in their lives, may possibly be approached by their physician with an authorization form for them to sign.

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