A SURVEY OF THE LIGHTING, MAKE-UP, COSTUMES, AND ACCOMPANIMENT CURRENTLY USED IN WATERSHOWS BY A SELECTED SAMPLE OF MIDWESTERN COLLEGES

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CHAPTER I

INTRODUCTION

Purpose of the Study

The first purpose of this study is to bring together some of the existing principles and practices in the use of lighting, make-up, costuming, and accompaniment for watershows.

The second purpose is to discover some of the latent possibilities in the use of lighting, make-up, costuming, and accompaniment.

The third purpose is to compile all of this material into a form usable by swimming instructors and swimmers who are interested in watershows.

Definition of the Study

This project is a study of some of the existing practices and principles of lighting, make-up, costuming, and accompaniment used in watershows by a selected sample of midwestern colleges. Included also is a consideration of some of the existing possibilities to be found in these aspects of watershow production, that have not been adequately explored. No attempt is made to cover each topic thoroughly in regard to mechanics or technical details. For this reason, the dance and dramatic departments of the college were utilized more than the music, engineering, home economics, art, and television departments.

Importance of the Study

The inclusion of synchronized swimming in the college extracurricular program has been growing rapidly in recent years. (2-49-50) Part of this growth is due to its popularity both with students and the general public, for synchronized swimming is not only a sport, but also a creative activity.

The inclusion of synchronized swimming activities in a watershow offers great possibilities as a sport and an art, and provides a challenge to both advisor and participant. Although the swimming instructor may be inadequately prepared for this undertaking, the challenge must be accepted. A watershow, although considered an extracurricular activity in the physical education program, is much like a dance or theatrical production and, as such, entails a knowledge of certain principles common to productions presented as entertainment of an artistic rather than an athletic type.

More often than not, the background of a swimming instructor contains little instruction in principles of dramatics and theatrical productions. In the future, physical education majors especially interested in swimming, may have courses offering the basic principles of music, lighting, make-up, costume designing, and staging included in their curriculum; in the past and at the present time, however, this has not generally been the case.

As a result of the present curriculum, swimming instructors given the responsibility of presenting a watershow often resolve their problems of lighting, make-up, costumes, and accompaniment by the trial and error method. At the same time, many swimming instructors wonder if others in their field have the same problems and if they solve them in a more efficient way. The increase in watershows, the need for a coordination of principles, existing practices, and latent possibilities, particularly in the use of lighting, make-up, costuming, and accompaniment of watershows, can be clearly demonstrated by the program content of the Women's National Aquatic Forums, (1) and the type of articles and questions and answers continually submitted to The Synchronized Swimmer, (3) the official organ for those in the field of synchronized swimming.

Sources of Information

Questionnaires were sent to twenty-two colleges in Illinois, nineteen in Ohio, twelve in Iowa, twelve in Indiana, eleven in Minnesota, seven in Michigan and six in Wisconsin.

Personal interviews were obtained with Mrs. Doris Bullock of the University of Illinois, Miss Dorothy Kerth of Michigan State College, Miss Mary Hooton of the University of Wisconsin, Alfred Kuhn of Northwestern University, Miss Iris Andrews of Bowling Green State University, Mrs. Elnora Martinelli of Purdue University, Mrs. Bernice Hayes of Wright Junior College in Chicago, Mrs. Adeline Potter of the Lake Shore Club in Chicago, and Mrs. Laura Waters of East Lansing, Michigan.

Personal letters pertaining to this study were received from Beulah Gundling, National Indoor Solo Synchronized Swimming Champion, Mrs. Peggy Seller, former President of the Amateur Synchronized Swimming Association of Canada, Miss Fritzie Gareis of the University of Michigan, Miss Catherine Kocher of Ohio State University, Miss Jean M. Maeys of Northwestern State College, and Miss Esther Wallace of Washington University.

Literature in the field of synchronized swimming was read; dance, theatre, and home economic books were studied. Catalogues were also received from several manufacturers, and material was obtained from a consulting engineer in East Lansing, Michigan.

Organization of the Study

Review of the literature. The second chapter contains a summary of existing literature in the field of synchronized swimming, directly related to lighting, make-up, costuming, and accompaniment used in watershows.

Method of procedure. The third chapter presents the methods used in obtaining and organizing the material for this study. It includes the identification of data needed, sources for obtaining these data, methods of collecting the data, and the type of treatment given to the material collected.

Treatment of the findings. Chapters four, five, six, and seven contain an analysis, interpretation, and summary of lighting, make-up, costuming, and accompaniment for watershows, respectively.

Conclusions and recommendations. The eighth chapter presents conclusions and recommendations based on the findings of the entire study.

Bibliography. An annotated bibliography is given at the end of the study to substantiate references quoted throughout the paper.

Appendix. This study is concluded by a set of appendices which include the questionnaire; a list of dealers and manufacturers who handle lighting, make-up, costumes, and sound equipment supplies; swimming clubs and adivsors in the midwestern colleges; a list of arrangers, composers, and record titles; sample make-up and costume illustrations; types of continuity used for watershows; purposes of watershows; watershow themes; and a comparison of pool sizes and seating capacities of forty-two midwestern colleges.

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2. Haynes, Wilma, "Stock Taking in Synchronized Swimming," Eleventh Annual Official Report of the Women's National Aquatic Forum, Hollywood, Florida, 1950, pages 49-50.

3. The Synchronized Swimmer, I (November, 1951) - III (June, 1954), inclusive, Richard J. Dodson, 1512 South Boulevard, Evanston, Illinois.

4. See Appendix G.

CHAPTER II

REVIEW OF RELATED LITERATURE

A review of the literature concerning lighting, make-up, costuming, and accompaniment used in watershows indicates that very little material has been written on lighting and make-up. Literature relating to costumes and accompaniment is somewhat more abundant, but by no means adequate.

This chapter is divided into four sections: lighting, make-up, costuming, and accompaniment. Each section will present a review of the literature pertaining to that particular subject as applied to watershows.

Lighting

As just mentioned, there has been little material written on lighting for watershows. Most schools use spotlights or floodlights for the illumination of shows, yet reference to this fact may be found only indirectly in published material. Lillian Burke found that subdued lighting is easier on the eyes of the swimmers and spectators. (5-10) (5-373) William P. Malm says that dim lighting can achieve a weird mood, but this can be sustained only for a short period of time. (22-20) Fern Yates and Theresa Anderson state in their book that color wheels can be used to produce a rainbow effect. (37-115)

Underwater lighting is used effectively for watershows. Fern Yates and Theresa Anderson found that soft diffused underwater light is good for demonstrating stunts and underwater swimming, (37-115) but unless these lights are set in when the pool is constructed, "the installation is definitely a luxury." (8-11) The Crouse-Hinds Company has published an article which described and illustrated two kinds of underwater lights. (8-11)

Ultra-violet or "black" lights are popular for producing spectacular effects. Fern Yates and Theresa Anderson mention some effects that may be produced with "black" light. (37-117) Joan Carlson has written a very good article telling of the many ways "black" light can be used in watershow productions. (6-19)

The literature shows that other lighting effects include candles and sparklers carried by the swimmers, (37-115) and bonfires on a float set in the center of the pool. (15-22)

Body lights can be worn by the swimmers to create an unusual effect. Martha Vaught gives a detailed description of how to attach and operate these lights. She used minature light bulbs, held on the body by adhesive tape, and connected by wires leading to a battery. (36-92-93) Another way of attaching lights to the body is described by Fern Yates and Theresa Anderson. This method consists of attaching a string of Christmas tree lights to the swimmer. These lights are operated by two dry cell batteries which are held in place by a belt worn around the waist. (37-117)

Gertrude Goss summarizes well some important points to be considered when lighting a watershow. She says:

> Each pool should be treated individually so as to get the best possible lighting effects. Lighting engineers should be encouraged to do a great deal of exploration on this subject, and personnel familiar with stage lighting should be utilized. Every water show should set up a subcommittee on light long enough before the event so as to do the most effective job possible. (11-8)

Make-up

With make-up, as with lighting, there is little material available for use in the production of watershows. There have been many books written on

make-up for the stage. Much of this material is applicable to watershows and will be discussed later in Chapter V.

Most of the literature mentioning make-up for watershows has to do with special effects obtained by using fluorescent or luminous paint. In the June, 1954 issue of The Synchronized Swimmer, a watershow was described in which the girls painted their entire bodies red for a routine, but unfortunately, there is no mention of the type of make-up used. (2-12) Excerpts from a letter written by Norma Olsen, appearing in The Synchronized Swimmer, tell of a silver body paint which she saw used effectively. (28-5)

Fern Yates and Theresa Anderson discuss the application of fluorescent and luminous cosmetics in their book. (37-117) Lillian Burke mentions some principles regarding the use of fluorescent cosmetics, (5-11) and Sabina Breck emphasizes the disadvantages of using fluorescent make-up in her article appearing in the Official Aquatics Guide, 1947-1949. (4-34)

Special effects achieved through the use of "black" light and fluorescent cosmetics are mentioned in Carole Hass' article, (15-22) and in excerpts of a panel discussion about watershows published in the Eleventh Annual Official Report of the Women's National Aquatic Forum. (18-42-43)

It is apparent from the scarcity of literature regarding make-up for watershows that there is room for much more research and experimentation with the use of make-up in the water.

Costumes

The selection of costumes for a watershow is a most interesting problem to all swimmers, for the costume not only is an important means of carrying out the theme, but also affects the physical appearance of each individual.

There appear to be conflicting opinions regarding the use of costumes in the water. In an article by Jean M. Maeys published in The Synchronized Swimmer, March, 1954, a description of a watershow is given in which the girls swam with an abundance of clothing in every number. (21-2) Diametrically opposed to this is a point of view held by George Jean Sperry who tries to discourage costumes, as she feels "it is hard to swim and take care of costumes at the same time." (31-3)

Other swimmers and instructors prefer simple costumes that suggest the idea rather than portray it literally. Lillian Burke duplicates this opinion, (5-10) as do Fern Yates and Theresa Anderson. (37-118)

At the Fourteenth Annual Women's National Aquatic Forum held in December, 1953, at Hollywood, Florida, one of the more complete reports on costumes was given by Nancy Berquist from the University of Illinois. The report presented principles for the selection of costumes, costume materials, specific suggestions for basic suits, head gear, and accessories, construction hints for making costumes. (3-34-36)

Specific suggestions for special effects and costume accessories may be found in Yates and Anderson's book, (37) and suggestions for character costumes are given by Olive McCormick and Katherine Curtis in their respective books, (26) (9) but much of the material found in the last two books is outdated.

Suggestions for costume accessories are given by Carole Hass. (15-22) Mrs. Doris Dannenhirsch, Ruth Lindsey, and Norma Olsen have written articles in The Synchronized Swimmer, which also give ideas for accessories and special effects, (10-3) (19-4) (28-5) as have Beulah Gundling and Betty Baldwin in their articles published in the Beach and Pool. (13-12) (1-14)

More material about costuming is found in the Report of the Third Midwest Aquatic Forum, (29-14-16) and in the Eleventh Annual Official Report of the Women's National Aquatic Forum. (18-43)

Joan Carlson and Jean M. Maeys also present a few tips on head gear. (6-19) (21-2)

Some of the specific suggestions mentioned in the literature on costumes will be included in Chapter VI, Costumes for Watershows.

Some of the important principles regarding the use of costumes for watershows are well summarized by Gertrude Goss. She states:

> Every watershow should set up a subcommittee on costuming long enough before the event so as to do the most effective job possible. The costume should be selected so as to utilize materials that are best suited for the water and the particular theme. Simple, inexpensive costumes should be made whenever possible by the participants themselves. The costume should be appropriate and becoming. The costume should be worn in practice often enough so that the participant feels at ease in it and knows that it wears well in the water. (11-8)

Accompaniment

Accompaniment is a very important part of the watershow and for this reason deserves early and careful selection. Much of the literature found on accompaniment for watershows also includes material about the selection of music.

Beulah Gundling, Margery Turner, Ellen Murphy, and George Jean Sperry all agree that music should be swimable, and neither too fast nor too long. (12-7) (35-17) (27-10) (31-3) Beulah Gundling, June Taylor, Lillian MacKellar, and Gertrude Goss believe that the music should have a steady and definite rhythm, especially for beginning swimmers. (12-7) (34-18) (20-26) (11-8) William Massof says that "a variety of music should be used for the show." (23-8)

William P. Malm, who has composed music solely for synchronized swimming, believes that "your music should give your audience new ideas." (22-20)

The types of accompaniment that have been used in watershows are discussed by several authors. Lois Carrell experimented with sounds made by the swimmers in the water at Mills College. Using swimming movements as the only accompaniment, she produced some interesting studies. A detailed description of these studies may be found in her article in the Journal of the American Association for Health, Physical Education and Recreation. (7-614-15) Sounds that the swimmers can make in the water are also discussed in Fern Yates' and Theresa Anderson's book, Betty Spears' book, and in George Jean Sperry's article. (37-113) (30-67) (27-3)

Interesting sound effects may be produced by a variety of percussion instruments. George Jean Sperry and Carole Hass mention a few of these, and in Betty Spears' book, a complete list is given. (27-3) (15-22) (30-67) Betty Spears' book also gives a good list of advantages and disadvantages regarding the use of percussion instruments. June Taylor has made an interesting and astute comment concerning the place of percussion in synchronized swimming. She says:

> Percussion does not really meet all the requirements of synchronized swimming, which is in part, 'interpretation of music through movement.' However, it can be used to create a special effect in a water show. (34-18)

Choral singing is another means of accompaniment. The advantages and disadvantages of this type are discussed by Fern Yates and Theresa Anderson, Betty Spears, and June Taylor. (37-5) (30-66) (34-18)

Individual instruments, combos, string quartets, and orchestras are still other forms of accompaniment. June Taylor has expressed a definite

opinion regarding the use of "live" accompaniment for routines. She says:

> Live orchestra is of course 'the most' for a water show. Live orchestra can produce music scored to suit the swimmers and then in performance can keep time with the swimmers as well as the swimmers keeping time with the music, and above all, an orchestra can lend such atmosphere to an aquacade! (34-18)

William P. Malm also feels that original music composed especially for the watershow is the best kind of accompaniment to use. His article gives some helpful procedures to follow when using live instruments in a watershow. (2-20) Ellen Murphy mentions some disadvantages of instrumental groups in watershows, and Betty Spears and June Taylor present a good discussion about live accompaniment; listing both advantages and disadvantages. (27-10) (30-66) (34-18)

The last and most commonly used form of accompaniment is recorded music, about which there is much literature and many opinions regarding their use. Gertrude Goss feels that "all types of music can be used in synchronized swimming." (11-8) Bernice Hayes believes that "both classical and popular music can be used to advantage." (16-3) Fern Yates, Theresa Anderson, and George Jean Sperry feel that classical music offers unused possibilities. (37-6) (27-3) Frank Martin and Beulah Gundling state that they would like to see music specifically composed for synchronized swimming. (25-2) (14-46) June Taylor says that it is wise to "avoid too classical or advanced music... and wise to avoid 'Hit Parade' music...." (34-18)

In regard to the use of vocal records, it was found at a discussion at the Women's National Aquatic Forum in 1951, that "many clubs use vocals for variety." (17-30) Mrs. Gordon Bennett used vocal records for an entire show, and "it was quite a success." (2-12) However, Fern Yates, Theresa Anderson, Beulah Gundling, June Taylor, Lillian MacKellar, and Bernice Hayes

have stated that they prefer recordings without vocals. (37-6) (12-7) (34-18) (20-26) (16-3)

Problems encountered in cutting records for a watershow are mentioned by Betty Spears and June Taylor. (30-66) (34-18)

Articles dealing with the selection of records for swimming routines include those written by June Taylor, Lillian MacKellar, George Jean Sperry, Bernice Hayes, Frank Martin, and Beulah Gundling. (34-18) (20-26) (27-3) (16-3) (25-2) (14-46) (12-7)

Both Betty Spears' book and Yates' and Anderson's book present a good discussion about the selection and use of records for watershow productions.

Very little material has been found about the operation of sound-producing equipment. Tape recorders, adapted for use in watershows, are a fairly recent development in this line, and have been used with varying degrees of success. George Jean Sperry does not advise tape recordings because of "...lack of durability." She also found that it was hard to pick up on the loud speaker system and as a result, the sound was not produced clearly. (32-1) More recently, Frank Martin and Jean M. Maeys used tape recorders with success for watershows which they directed. A more detailed description of this method of recording sound may be obtained by referring to the articles written by the above two authors in The Synchronized Swimmer. (24-6-7) (21-2)

In a survey of the recent trends in synchronized swimming conducted at Northwestern University, 1948, it was found that out of the thirty questionnaires returned from various persons in the synchronized swimming field, "all had used records, eight had used percussion instruments, four had used instrumental records, four had used singing, four had used piano, three had used orchestras or bands, and one had used a verse-speaking choir" for

watershows. (33) It was also found that "the colleges seem to be doing most of the experimenting with accompaniment other than records." (33)

Summary

When looking over the material just discussed, the author found literature in certain areas of lighting, make-up, costumes, and accompaniment for watershows quite limited. For example: very little material was found regarding the use of spotlights, floodlights, colored lights, make-up, selection of suits and costume materials, kinds of accompaniment other than records, and the production of sound.

This occurence is not unusual when it is considered how young the sport of synchronized swimming and the art of watershow productions are in relation to other kinds of stage productions. However, much of the literature shows that swimmers and aquatic club advisors are experimenting with new ideas.

Although literature in the field of watershows is far from adequate at the present time, the important fact is that constant experimentation, revision, and growth is occuring in synchronized swimming all over the country, and this is a healthy and necessary occurence in any new field.

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CHAPTER III

METHOD OF PROCEDURE

The procedure in this study followed four general steps. First, the types of data needed for the study were identified; second, the sources for obtaining these data were located; third, the methods used for collecting the data were determined; and fourth, the types of treatment to be given the data were established.

This chapter will present a clear account of how these four steps developed.

Type of Data Needed

Lighting. The following lists show an identification of data needed for this study:

1. The different types of lights that can be used and are used in watershows.
2. Where these lights can be obtained.
3. How lights are operated for a watershow.
4. Principles regarding the use of lights for a watershow.
5. Special effects achieved through the use of lighting in a watershow.

Make-up.

1. The types of make-up that are used and can be used in a watershow.
2. Where make-up can be obtained.
3. Principles for the application and removal of make-up.
4. Special effects that can be achieved by the use of make-up in watershows.

Costumes.

1. Principles regarding the selection of costumes.
2. Where costumes may be obtained.
3. The effect of color and light on costumes.
4. Types of costumes, accessories, and headdresses that can be used in watershows.
5. Planning, care, and disposal of costumes.

Accompaniment.

1. Types of accompaniment used in watershows.
2. Principles regarding the selection and use of accompaniment.
3. Sources for obtaining accompaniment and sound-producing equipment for watershows.
4. Types of sound equipment used for watershows.

Sources for Obtaining Data

Professional publications. Much of these data were obtained by reading literature in the field of physical education and synchronized swimming. This included professional magazines such as the Journal of the American Association for Health, Physical Education and Recreation; The Amateur Athlete; Beach and Pool; The Official Aquatics Guide; and The Synchronized Swimmer. Reports of the Eleventh, Twelfth, Thirteenth, and Fourteenth Women's National Aquatic Forums, and the Second and Third Midwest Aquatic Forums were reviewed. Quite a bit of valuable material was found in the two most recent books written on synchronized swimming: Synchronized Swimming, by Fern Yates and Theresa W. Anderson, and Beginning Synchronized Swimming, by Betty Spears. Material from "A Survey of the Recent Trends in Synchronized Swimming," a survey conducted at Northwestern University in 1948, was also utilized.

Other published material. Helpful material on lighting and make-up was found in reference books on stage lighting and make-up. Material about costumes was also found in books on stage lighting, on costume design, and clothing.

Catalogues and price lists for lights, make-up, swimming suits and caps, costume materials and accessories, phonographs, and sound-production equipment were supplied by commercial companies and a consulting engineer.

Personal letters. Personal letters containing much useful material were received from: Beulah Gundling, National Indoor Solo Synchronized Champion, from Cedar Rapids, Iowa; Mrs. Peggy Seller, President former of the Amateur Synchronized Swimming Association of Canada, from Montreal, Quebec; Miss Fritzie Gareis of the University of Michigan; Miss Jean M. Maeys of Northwestern State University in Natchitoches, Louisiana; Miss Catherine Kocher of Ohio State University; and Miss Esther Wallace of Washington University in St. Louis.

Interviews. One of the most valuable sources of information was the result of personal interviews with the following persons: Miss Dorothy Kerth of Michigan State College, Mrs. Doris Bullock of the University of Illinois, Miss Mary Hooton of the University of Wisconsin, Alfred Kuhn of Northwestern University, Mrs. Elnora Martinelli of Purdue University, Miss Iris Andrews of Bowling Green State University, Mrs. Bernice Hayes of Wright Junior College in Chicago, Mrs. Adeline Potter of the Lake Shore Club, also in Chicago, and Mrs. Laura Waters of East Lansing, Michigan.

Questionnaires. The largest source for collecting material was the data returned from questionnaires sent to a selected sample of midwestern colleges. This questionnaire will be elaborated on in the next section.

Methods Used for Collecting Data

Before developing the questionnaire, available research was studied on the mechanics of questionnaire construction, and the type of sample desired was determined. The sample selected for the survey included the four-year colleges in Ohio, Illinois, Indiana, Iowa, Michigan, Minnesota, and Wisconsin having an enrollment of five hundred students or more. Colleges exclusively for men were omitted.

Next, a sample questionnaire, including the kinds of material needed for the survey, was set up. The questionnaire was of a type employing check list and open answer questions, and was three pages in length with a total of twenty-one items and sub-parts. The swimming club advisor was asked to check and answer items pertaining to: pool facilities, types of lighting, make-up, costumes, accompaniment and sound equipment used, where the above were obtained and their effectiveness. Questions regarding the operation of lights, sound equipment, watershow continuity, and purposes of watershows were also asked. The questionnaire concluded with two open items allowing for the respondent's additional comments and/or opinions. A sample of this questionnaire may be found in Appendix A.

The questionnaire was sent to twenty-two colleges in Illinois, nineteen colleges in Ohio, twelve colleges in Iowa, twelve colleges in Indiana, eleven colleges in Minnesota, seven colleges in Michigan, and six colleges in Wisconsin.

Questions asked in the letters sent out and in the personal interviews included the same material as that in the questionnaire.

Treatment of Data

Of a total of eighty-nine questionnaires sent to midwestern colleges, fifty-six were returned. Thirty-three of those fifty-six colleges put on watershows.

Computing the results in terms of percentage, 63% of the eighty-nine questionnaires were returned, and 37% of the eighty-nine schools questionnaires were sent to, put on watershows. However, of the fifty-six colleges that returned questionnaires, 59% put on watershows.

Table I shows the number of questionnaires sent to each state, the number returned, and the number that put on watershows of those returned questionnaires. The per cent of returned questionnaires and the per cent of positive replies of those returned questionnaires is also given.

TABLE I

SUMMARY OF THE NUMBERS, PER CENT, AND TOTAL OF ANSWERED AND UNANSWERED RETURNED QUESTIONNAIRES

State	Number Sent	Number Returned	Total Per Cent Returned	Number of Positive Returns	Per Cent of Positive Returns
Illinois	22	14	63	7	32
Ohio	19	14	74	11	58
Iowa	12	3	25	1	8
Indiana	12	8	67	4	33
Minnesota	11	8	73	6	55
Michigan	7	5	71	3	43
Wisconsin	6	3	50	1	17
Total	89	56	63	33	37

The total number of positive replies to the questionnaire sent out was thirty-three, but a total of thirty-eight midwestern colleges were represented in this study as material from five colleges was obtained by other means. Material utilized from Michigan State College, University of Illinois, University of Wisconsin, Northwestern University, and the University of Michigan, was obtained entirely by personal interviews and letters.

After allowing sufficient time for the questionnaires to be returned, the results were organized and tabulated where possible. This material was then grouped with the information collected from all other sources, and the entire body of information was organized, analyzed, and interpreted.

The next four chapters will present a discussion of lighting, make-up, costuming, and accompaniment respectively. Each chapter will present an analysis, interpretation, and summary of all the pertinent material collected on the respective topics.

Chapter IV

LIGHTING

This chapter will discuss the types of lights that can be and are used in watershows, where they are obtained, how they are operated, general principles regarding the use of lights for watershows, and special lighting effects tried in watershows.

Because of the lack of information concerning lighting for watershows, much of the material in this chapter has been obtained from lighting for the stage.

Types of Lights That Can be Used in a Watershow

Spotlights. Spotlights, also called focus lanterns or focus lamps, come in a variety of sizes and types. As all lanterns are basically the same, one general description will serve for all. Spotlights with a variety of wattages may be secured, although 250, 500, and 1,000 wattages are common in stage use. (1-50) Naturally, the higher the wattage, the greater the intensity of light produced. A spotlight beam will carry from thirty to sixty feet, depending on the wattage used. (1-334)

Spotlights may be on a stationary or revolving base, and the beam of light can be adjusted by a controllable mechanism attached to the lamp. The amount of light may also be controlled by a dimmer, with the proper connection to a master control board.

Spotlights are used to illuminate the pool and swimmers; also to focus attention on a particular person or object.

Floodlights. Floodlights are similar to spotlights but give a fixed light distribution. (1-34) General state floods are made in three sizes for 60-150 watt lamps, 300-500 watt lamps, and 1,000 watt lamps. (1-11) Floods may be on

an adjustable base but more frequently they are housed together in a magazine batten. (1-45) Although the light distribution of a flood is fixed, the beam may be narrowed considerably by attaching a hood or funnel to the face of the flood. (1-43)

Floodlights will throw a beam from twenty-seven to sixty feet depending on the wattage of the lamp. (1-333) They are mainly used for illuminating the pool, swimmers, and deck.

Carbon Arc lights. An arc lamp is not commonly used for watershows, but as a few schools continue to maintain these lamps, a brief description is considered pertinent. A carbon arc lamp is a powerful following spot. (1-28) It is operated by electric current but produces light by burning carbon rather than by an illuminated filament. (1-27) Wattages on a carbon arc lamp may go as high as 5,000 watts. (1-27) These lamps are used to illuminate the pool and swimmers.

Underwater lights. The purpose of underwater lighting is to illuminate the water so that swimmers may be seen better while executing movements beneath the surface.

There are two types of permanent underwater lights made commercially--the wet niche and the dry niche. The wet niche type is designed so that the lamp receptacle and the wiring can be withdrawn as a unit through the junction or pull box located in the deck of the pool. (5-10) The dry niche type is used for pools having a passageway or tunnel around the side of the pool. (5-10) These lights should be set eighteen inches below the surface of the water and close enough to each other so that the arc of light from one lamp will meet, but not overlap, with the beams of the adjacent lamps. (2) Lights of 150 to

1,000 watts can be used, with wattages of 250 or 400 commonly installed. (5-11) The cost for each light and fixture is approximately $300.00, making them expensive to install. (5-11)

Portable underwater lights which can be placed on the botton of the pool with no danger of shock, may also be purchased or rented. (15-5)

Homemade underwater lights may be made by attaching waterproof underwater lights to brackets or steel pipes which conduct the wire through the water, over the pool edge and to the light socket. All joinings must be waterproofed and a licensed electrician should make the installation and supervise the use of the lights. (18-113)

Another more time-consuming method of making underwater lights is to place a sixty-watt lamp and socket, or larger, inside a mason jar, with a lead cable leading out through the top. The opening is then tightly sodered and the jars are wrapped with cellophane in the color desired and placed on the pool floor. The lead cables may extend to a central hook-up where they are mass-controlled. Again, an electrician must help with the installation and operation of these improvised lights. (11)

Black lights. Ultra-violet or black lights are used to produce a spectacular effect in a watershow. This effect may be achieved by placing a black light glass filter over the spotlight or floodlight. The lights must have a wattage of 500 or more to produce any effect. Filters are less expensive than an ultra-violet lamp but require a powerful spotlight.

It is more desirable to have an ultra-violet lamp; these may be purchased in the form of spotlights or floodlights. They come in a variety of wattages but at least a 250 wattage is necessary to give minimum light to formations in a sixty foot by twenty foot pool. (4-19) In a larger pool, more than one black

light is necessary. The black light should be placed within a few feet and above the level of the fluorescent surface to achieve the best results. The intensity diminishes rapidly as the distance increases.

Black light should be used in no more than two numbers in a watershow to retain its dramatic effectiveness. One number in black light is more desirable.

Ultra-violet light is not just one wave length, but a whole series, and its shorter wave lengths are extremely dangerous to the eye. Often black lights are encased in a black glass bulb which filters off these dangerous shorter waves. If other types of black lights are used, the shorter wave lengths injurious to the eye may be stopped by a sheet of ordinary glass. (1-158)

Projectors. There is one more type of lamp that may be used in a watershow. This is a lens or slide projector. It is used in a watershow to produce special effects in scenery or as a means of developing continuity. By placing the desired slide in the lantern, either sharply focused images or broad effects lacking in detail may be projected. (10-353) A Linnebach projector is used for the latter kind of picture. (10-354)

A projector consists of a 1,000 watt spotlight to which a lens, holder, and sometimes a hood are attached. (10-353)

Colored light. Colored filters (slides or gelatins) may be inserted in front of a lamp to produce colored light. Some lamps have four filter holders permanently attached to the lamp. Other lamps may have an attachment for a color wheel. This color wheel, usually containing four to six colored gelatins, can be attached to the lamp and rotated by hand or motor to produce a rainbow effect of changing color hues. Colored gelatins come in a variety of hues. (1-56) They are used in watershows to enhance the costumes and/or help portray the mood or theme of the number.

Types of Lights Used in Watershows by Colleges in the Midwest

Information concerning the type of lights used in watershows were obtained from thirty-seven colleges by means of the questionnaire and interview. The following table shows a summary of the types used and common wattages.

TABLE II

THE TYPES OF LIGHTS USED AND COMMON WATTAGES USED FOR WATERSHOWS IN THIRTY-SEVEN MIDWESTERN COLLEGES

Type of Light	Number of Colleges	Common Wattages
Stationary spots	24	3-150, 2-200, 1-300, 1-400, 2-500, 1-2000
Revolving spots	23	1-150, 1-300, 3-1000, 1-2000
Floods	18	3-150, 1-500, 1-750, 2-1000, 2-2000
Black lights	14	1-60, 1-150, 1-1000
Permanent underwater lights	12	1-150, 1-250, 1-500
Improvised underwater lights	3	
Carbon Arc lamp	1	

Only nine schools, or twenty-four per cent, used just one type of light for their show. Of the other colleges, twenty-four per cent used two kinds of lights, another twenty-four per cent used three kinds of lights, twenty-two per cent used four kinds of lights, one college used five kinds of lights, and one college used six kinds of lights. The average number of different types of lights used by the thirty-seven colleges of this group, for watershows, was between two and three. These results are presented in Table III on the following page.

TABLE III

THE NUMBER OF DIFFERENT TYPES OF LIGHTS USED IN WATERSHOWS BY THIRTY-SEVEN MIDWESTERN COLLEGES

Different Types of Lights Used	Number of Colleges	Percentage of Colleges
1	9	24
2	9	24
3	9	24
4	8	22
5	1	3
6	1	3

Where Lights are Obtained

The lights used by these colleges were obtained from a variety of sources, although the majority of swimming clubs either owned or borrowed them from the dramatic (theatre) department or unnamed sources. Appendix B gives a list of dealers and manufacturers where all types of lights discussed to this point may be obtained. Generally, lights may also be rented from the same companies that sell them.

Table IV below shows the sources where the represented colleges obtained their lights for watershows.

TABLE IV

SOURCES FOR OBTAINING LIGHTS FOR WATERSHOWS UTILIZED BY THIRTY-SEVEN MIDWESTERN COLLEGES

Where Obtained	Number of Colleges
Own	14
Borrowed	11
Dramatics department	10
College	5
Rented	7
Other schools	1
Local Electric company	2
Dance department	1
Large corporation	1
Local commercial theatre	1

Operation of Lights

The following table shows the persons employed to operate lights for watershows from the represented group of colleges.

TABLE V

SOURCES USED BY THIRTY-SEVEN MIDWESTERN COLLEGES FOR OBTAINING OPERATORS FOR LIGHTING A WATERSHOW

Operated by	Number of Colleges
Paid electrician from the college	1
Maintenance department	14
Girls in club	10
Janitor	1
Dramatics department	7
Interested students	10
Men's swimming club	2
Electrical engineering students	2

Several schools obtained their lighting operators from more than one of the above sources.

The lights were operated by a master control board, by individual operators, or a combination of the two above systems. Table VI shows the number of schools which utilized these different systems.

TABLE VI

TYPES OF LIGHTING SYSTEMS USED FOR WATERSHOWS BY THIRTY-SEVEN MIDWESTERN COLLEGES

Lighting System	Number of Schools	Percentage
Individual operators	15	41
Master control board	2	5
Combination of the two above systems	20	54

Of those schools that used a combination of individual operators and a master control board, four colleges used an interphone system to connect the lighting chairman with all other operators. One college used individual operators for an arc lamp and controlled all other lights with a master switchboard; one college had a dimmer only for the floodlights; and one college had only its underwater lights controlled by a master switch board.

The following list is a sample set of instructions for a lighting director of a watershow. Particular instructions that might pertain to one individual school are omitted.

Lighting Director Instruction Sheet

1. Know the routines to be included, color of costumes, and the beginning and ending of each record.

2. Keep an inventory of lights and be sure that they are obtained on time and installed properly. This included colored gelatins.

3. Check with the club advisor and property crew or maintenance crew to see that everything is in order.

4. If help outside of the swimming club is used, know your lighting crew by their first names.

5. Talk to routine directors before the dress rehearsal to see if they want their routines lighted in a particular way.

6. Write lighting instructions on a cue sheet, with ample copies.

7. Check with lighting crew before and after dress rehearsal to answer questions.

8. Try different color combinations in your color slides at the dress rehearsal. Write the most satisfactory one on your cue sheet.

9. Change beam angle and color of lights as swimmers take different positions.

10. Direct crew throughout the performance if using an intercommunication system, so that they follow your instructions, not their own. If this system is not used, be sure each crew member is well informed and has a copy of lighting instructions.

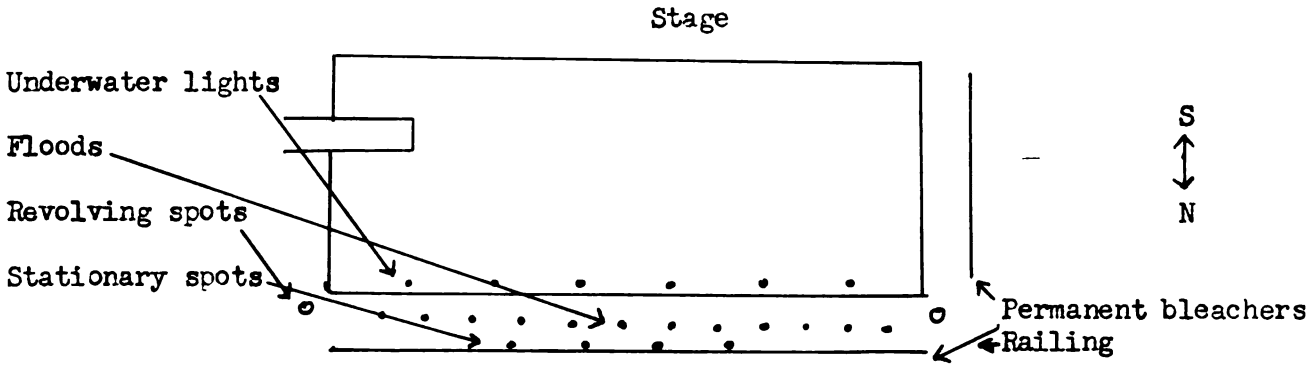
11. Hand in at least a duplicate form of the lighting continuity no later than one week after the show to the club president or club advisor.

The following sample cue sheet shows how the lights were operated and special effects obtained at the 1953 watershow "Confectionately Yours" held at the University of Illinois.

Lighting Chairman's Cue Sheet for "Confectionately Yours"

Lights were obtained from the college, operated by college electricians, and directed by an associate member of the swimming club by means of an interphone system.

Types of Lights	Where Placed
12 Floods	North deck
6 Underwater lights	North side of pool
4 Stationary spots	North railing
2 Revolving spots	Northeast corner and
6 Black light filters for the spotlights	northwest corner



Signal given to crew to change lights.

1. Give electricians plenty of time to change lights.
2. Count in time to the music before giving preparatory signal.
3. Give the color, "red," switch to red,...ready, one, two, switch.

Introduction to show.

1. Underwater lights on
2. Floodlights on
3. House lights on

First number - Peppermint

Colors of costumes - red and white stripe
Music - "Washington Post March" and "Stars and Stripes Forever"

Lights
1. Spot on peppermint stick on stage curtain
2. Red gelatins on spots and floods as swimmers enter
3. Switch to green gelatins as swimmers enter the water
4. Northwest revolving spots switch to pink, to blue, to amber, to straw, etc., until the number ends.
5. All lights out with the end of the record

Second number - Candy Corn

Colors of costumes - blue with red and white plaid
Music - "Rustic Dance" and "Tennessee Rag"

Lights
1. Light blue gelatins on spots, nothing on floods
2. Switch to one-half amber, one-half straw
3. Switch to one-half red, one-half nothing
4. Switch to pink
5. Lights off with the end of the record
6. Lights on again for a minute to allow audience to see program

Third number - Taffy

Colors of costumes - taffy colored
Music - "Blue Violins," "Cristal," "Blue Tango"

Lights
1. Spot on taffy on stage curtain
2. Spot on chef in corner of the pool
3. Yellow gelatins on spots follow swimmers with revolving spots
4. Near end of record all switch to green, to amber, etc., to end of record
5. Lights off at end

Fourth number - Life Savers

Colors of costumes - orange "glo" and different colors
Music - "Holiday for Strings"

Lights
1. Spot on life savers on stage curtain
2. Two revolving spots used only to follow divers
3. One spot with pink gelatin, the other at the northeast corner without color
4. Spots follow diver as he leaves the board and goes into the water. Then the spots close (black-out) and return to the next diver
5. Stationary spots left on without color

Fifth number - Bon Bons

Colors of costumes - navy blue and white
Music - "Carousel Waltz" and "Gaite Parisienne"

Lights
1. Spots on bon bons on stage curtain
2. Spin color wheels on all lights from beginning to end
3. Lights off at end

Sixth number - Candy Kisses

Colors of costumes - brown and aqua
Music - "Candy Kisses" and "Surrey with a Fringe on Top"

Lights
1. Spot on candy kisses on stage curtain
2. Pink on one-half lights, blue on other half
3. Switch to amber and green
4. Switch back to pink and blue
5. Switch to amber and green, etc., to end of number
6. Lights off at end

Seventh number - Licorice

Colors of costumes - lime and orange
Music - "La Comparsa" and "Jungle Drums"

Lights
1. Black light filters on all spots throughout number

Eighth number - Butterscotch

Colors of costumes - multicolored plaid
Music - "Scotch Bagpipe Selections" and "Keel Row"

Lights
1. Spot on stage curtain on butterscotch
2. One-third lights pink, one-third blue, one-third white
3. Spin color wheels intermitently
4. Near end, floods go out by twos, spots dim and all change to blue gelatins as swimmers leave
5. All lights out at end

Ninth number - Turtles

Colors of costumes - green
Music - "William Tell Overture" and "Penthouse Serenade"

Lights
1. All lights green all the way through

Tenth number - Assorted Sweets

Colors of costumes - black, fuschia, yellow, and chartreuse
Music - "Fiddle Faddle," "Belle of the Ball," "Carousel Waltz"

Lights
1. Color wheels on all spots and spin all the way through
2. At the end, run follow spots up and down the line of girls, still spinning the color wheels
3. All lights out
4. Spots go back on and focus on the stage for a minute
5. House lights on after swimmers have vacated the pool

General Principles Regarding the Use of Lights for a Watershow

The type of lighting used can change a watershow from a demonstration to a finished production, and is, therefore, extremely important. The kind of lighting to be used for each number must be carefully selected and worked out to make the swimming most effective from the spectators' point of view.

Below is a list of principles that should be observed when lighting a watershow.

1. Good swimming is more important than spectacular lighting. The lighting should not detract from the swimming.
2. Unless special effects are desired, each routine should be adequately lighted so that the swimmers can be easily seen, although the lighting should be subdued in respect to the swimmers' and spectators' eyes. (3-10)
3. If diving is used in the show, lights should not be focused directly into the eyes of the diver as he is leaving the board.
4. House lights generally should be turned off during the performance so that the proper mood can be set, and so that attention will be focused on the swimmers.
5. To avoid monotony, use a variety of lighting effects throughout the performance.
6. Avoid repetition of one type of special lighting effect in the same performance.
7. Lights should not be on a level with the audience, because of the glare from the light and reflection of the water.
8. Lights should be dimmed or turned out between each number.
9. College electricians should be consulted to insure that proper electrical connections are made.
10. All local laws regarding the use of underwater lights, stage lights, exit lights, and other lights should be observed.

Special Lighting Effects

All functions of light may be accomplished by changing four controllable properties; quantity, distribution, color, and quality.

Quantity. It is almost necessary to have a control board when changing the quantity of light in a watershow as the process involves dimming. However, there are effects that can be produced manually with success.

A finale will usually have more lights than a solo or duet. A routine may begin with only one or two lights and end with many lights, or this process may be reversed. A weird mood can be achieved, for a short time, by dim lighting. (14-20)

Distribution. The distribution of light on the pool area may change according to the mood desired or the number of swimmers in the water. In large group numbers, it is necessary that the lighting include all of the swimmers. Revolving spots may be used effectively for continuity, or small swimming numbers. If underwater lights are installed, they may be used with or without the other lights, for numbers that are executed largely beneath the surface of the water.

Color. Light and color may be combined to produce some striking effects. It can blend with the music to set the mood of the routine and it can emphasize or distort costumes and make-up. Above all, it can add much variety to a production. The principle of variety has long been recognized and utilized on the stage.

Different effects may be produced by the color thrown on costumes and make-up. These effects will be discussed in their respective sections. "Generally, colored lights when focused on a color of complimentary hue will gray that color, but colored light focused on a color of similar hue will enhance that color and make it more prominent." (10-370) Blue light on blue velvet or satin makes it seem to glow from within. The reader is referred back to the sample cue sheet for the lighting director on pages 28 to 31. It will be noticed that the colored gelatins chosen for each routine were for the most part similar colors.

Quality. The largest number of special effects in lighting fall into this category.

The following table shows the different lighting effects tried by the represented schools and their relative effectiveness.

TABLE VII

SPECIAL LIGHTING EFFECTS USED BY THIRTY-SEVEN MIDWESTERN COLLEGES AND THEIR RELATIVE EFFECTIVENESS

Lighting Effects	Number of Schools	Success	
		Good	Fair
Black light	18	12	2
Luminescence	2	1	
Candles	9	6	
Flashlights	7	5	1
Body lights	7	5	
Sparklers	4	4	
Torches	3	2	
Lighted batons	1	1	

Black light. Ultra-violet light creates a dramatic atmosphere when exposed to any fluorescent material, and gives a deep purple color, if used on swimmers, without any fluorescent material. (18-117) Black light was used by three colleges without fluorescent materials and was successful in producing the desired effect. On the other hand, it was found that fluorescent cloth did not show up well unless under black light.

Of the two schools that did not find black light successful, both gave as their reason an insufficient amount of ultra-violet light. One of these schools had a pool forty feet by seventy-five feet and used three 150 watt lamps. The conclusion was that three black light lamps with at least a wattage of 250 should

have been used. The other school used one black light lamp for a pool twenty-five feet by seventy-five feet and found that at least two lamps were needed to produce sufficient light.

Luminescence. If luminous (phosphorescent) paint is used, it must be applied generously to get sufficient intensity, and all luminous materials must be activated under light before use. (18-117) A more thorough discussion will be presented in the section on Make-up.

Body lights. One way to use body lights is described in an article by Martha Vaught. Two minature light bulbs are taped to each ankle, knee, thigh, wrist, and shoulder. These lights are connected by a covered wire which leads to a battery. The battery is then placed on the swimmer's back and held in place by adhesive tape. (17-92-93) (7-8)

Another way of attaching lights to the body is described by Fern Yates and Theresa Anderson. Christmas tree bulbs, spaced ten inches apart on a rubber covered wire are attached to the body. One set is attached to the swimmer's arms and extends from wrist to wrist; another extends up both legs. Each string is connected to two dry cell batteries which are held at the back by a belt worn around the waist. The swimmer can turn on the lights by pushing either of the switches at her back. (18-116)

Small flashlights dipped in paraffin and then taped to the arms and legs of the swimmers is still another method of obtaining this effect. (6) Also, minature bulbs can be sewn on leotards and have all connections coated with a rubber base cement. (13)

Flashlights and body lights are listed under two columns in Table VII. This is because they appeared in the questionnaire by those respective names, and it is reasonably safe to assume that the two might be placed under the heading, "body lights."

Their failure at one school was caused by insecure attachment on the body. It is recommended that if body lights are used, they be fastened securely to the body or costume.

Sparklers. There are two kinds of sparklers that may be purchased commercially, a twenty-inch sparkler that burns for three minutes and a thirty-six-inch sparkler that burns for five minutes. (18-116) It is recommended that the long sparklers be purchased for use in a watershow number.

Torches. Torches may be made very simply by wrapping broomstick handles with burlap, felt, or any other burn resistant material. (12) The torches may be soaked in kerosene or alcohol, the latter is preferable.

Other lighting effects. Other lighting effects include: bonfires placed on a float in the center of the pool, (9-22) flaming hoops, Linnebach projectors used to project scenes or figures on the stage backdrop, (16-14) and spotlights focused on objects, murals, or a globe mirror. A globe mirror may be made by forming chicken wire into the shape of a sphere and covering it with broken bits of mirror held fast by paper mache. Another effective lighting trick is the use of flash bulbs to simulate lighting.

Summary

In order to experiment with and utilize all lighting possibilities in a watershow, it is recommended that persons experienced in this field be asked for advice and assistance. This may include persons from the theatre, dance, engineering, audio-visual aids, and television departments of the college.

"There is room for much experimentation and improvement in lighting. Effective lighting can add considerably to the dramatic possibilities of routines and a watershow, but as yet most pools do not have the equipment nor persons with the experience to make the most of lighting possibilities." (8)

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CHAPTER V

MAKE-UP FOR WATERSHOWS

"The purpose of make-up is to give visual emphasis to the player and reflect his characterization." (4-419) Unless character make-up is being done, "the aim of minimum make-up is to restore the natural color of the complexion, to make the eyes larger and more expressive, and to emphasize the features so that they will be clearly visible to the audience." (7-147)

Types of Make-Up Usable in the Water

Foundation grease paint. This grease paint is a basic color which is applied to all parts of the face. Grease paints are prepared in a variety of skin shades; each shade designated by a number or a name. (4-457)

Under rouge. Under rouge is a basic rouge with a grease foundation and is indelible when applied to the cheeks. (4-457)

Lining colors. Lining colors are prepared with a grease foundation similar to grease paint and under rouge. Lining colors are used for eye shadow and for high-lighting features of the face, and are made in a variety of colors. (4-457) The most common colors are brown, blue, or white.

Dermatograph pencils. Eyebrow pencils are used for marking the skin and lining the eye and eyebrow. These pencils are made in colors of black, brown, and blue. (4-457)

Dry rouge. Dry rouge is applied after the grease paint make-up has been completed and powdered. It is used mainly for touching up. (4-458)

Powder. Powder is made in a variety of skin shades. Although it does come off in the water, it may be necessary to use it over a greasy base to cut down the reflection of the spotlights on the skin.

Lipstick and nailpolish. These two preparations need no explanation, as their purpose and use is common knowledge.

Pancake make-up. Pancake make-up is prepared in a solid base which can be a grease or non-grease foundation. The non-grease foundation will stay on for an entire performance and comes in a variety of skin shades.

Liquid make-up. Liquid make-up can be used for covering all exposed parts of the body, as well as the face. It is made in a variety of skin shades which correspond to foundation grease paint colors. It is semi-waterproof, but can easily be removed. (4-458) This type of make-up is often used for character make-up as it is easily applied and will stay on for one performace.

Fluorescent cosmetics. Fluorescent body paint is prepared with a grease base, and comes in shades of red, pink, orange, yellow, lemon, green, blue, and white. Fluorescent ink, often called invisible ink, is prepared in a liquid, non-grease foundation, comes in a variety of colors, and may also be used on the body. Fluorescent cosmetics show up well only under ultra-violet (black) light.

Luminous cosmetics. Luminescent or phosphorescent make-up is prepared in a semi-solid base and comes in shades of green, yellow, red, and blue. This substance shows up in complete darkness, and must be "activated" under light after application in order to produce the phosphorescent glow.

Black make-up. Black grease paint such as the kind worn in minstrel shows is obtainable. Another type of black make-up made from burnt cork may be purchased and also used in the water. It is superior to the above as it is prepared in a non-grease foundation and will not rub off on costumes as easily.

Metallic substances. Metallic powders and gilt body paints are not strictly cosmetics, but as they have been used for make-up, they are subsequently included. Metallic powders must be mixed with a grease base liquid substance to facilitate application and durability. The danger of using metallic substances on the skin will be discussed under Application of Make-up.

Vaseline. Although vaseline is not considered a cosmetic, it has been used effectively on the body under black light to give a silver glow to the swimmer. (3-22)

Most mascara is not waterproof and therefore is not usable in the water, although there is waterproof mascara available on the market.

The reader is referred to Appendix B where a list of dealers and manufacturers for cosmetics is given.

Types of Make-up Used in the Colleges

The following table shows the different kinds of make-up used by thirty-seven midwestern colleges. It will be noted that twenty-one, or fifty-seven per cent of these schools left this section of the questionnaire blank or stated "none used."

TABLE VIII

TYPES OF MAKE-UP USED IN WATERSHOWS BY THIRTY-SEVEN MIDWESTERN COLLEGES

Make-up Used	Number of Colleges
Grease paint	10
Metallic base	2
Liquid leg make-up	2
Fluorescent grease paint	7
Fluorescent ink	1
Luminous	4
Black grease paint	1
Personal	4

Factors Affecting the Use of Make-up

Artificial light changes the natural coloring of the skin, making it pale or yellowish. It absorbs the red of the cheeks and lips, and robs the eyes of their sparkle, making them narrower and less expressive. (7-21-22) "Other features of the face lose their true relief and appear flatter, less expressive, and less clear to the audience." (7-147) In strong and brilliant illumination, the application of light paints must be moderate; dark paints should be used more freely. In poor illumination the light paints should be used more profusely, while the dark paints should be applied with moderation. (7-26)

Colored filters over lights affect the complexion and make-up. Pink, weak violet, and steel or daylight blue are generally flattering for make-up. (7-38) Amber light tends to make the complexion sallow, while red light neutralizes the effect of rouge. In blue light, rouge on the cheeks appears as two black spots, and green light gives the face an unhuman quality. (4-370-71)

Naturally, make-up that runs in the water is to be avoided, and preparations that might be injurious to the skin or body must be used with caution and only after the user is assured of its safety.

Black face numbers can be highly entertaining, but they should also be used with caution, particularly if there is possibility of offending any part of the audience.

Application and Removal of Make-up

Regular make-up. It appears from the questionnaire returns, that most swimmers apply their own make-up. Seven colleges mentioned that regular make-up was used with the addition of eyebrow pencil, rouge, and eye shadow.

The regular make-up was assumed to include lipstick, powder, and/or pancake make-up. At the University of Illinois, the swimmers apply fairly heavy make-up to the eyebrows, face, and lips. Clear red nail polish is worn on the fingers and toes, the same shade being worn by every member. Lipstick and rouge are considered the only essentials at Bowling Green State University, although grease paint and eye shadow are also applied.

It is ideal for every swimmer to have a good tan for the watershow, but in our temperate climate, this is impractical. Liquid body make-up of the shade of tan desired offers a reasonable substitute, with facial features emphasized by use of rouge, lipstick, eye shadow, and pencil.

Cold cream should be used before using soap and water to remove this make-up, especially if eye shadow is used.

Grease paint. The application of grease paint, liners, and solid rouge will be discussed fully in the section "Make-up for television."

Any kind of grease will help to remove grease paints, for example, cold cream, vaseline, or the fatty preparation sold as grease-paint remover. Cocoa butter is one of the oldest and most effective removers employed. (6-49)

Liquid make-up. Liquid make-up that is fairly waterproof may be purchased from any theatrical cosmetic company. Many of the drugstore varieties will run in the water. Although a good liquid make-up does not come off much in the water, it will come off on the bathing suit. This should be kept in mind, particularly if wearing a white suit.

Liquid make-ups may be successfully removed by soap and water.

Fluorescent paints. There is no certain way of determining how much black light paint should be applied. To be safe, the swimmers should be tested under black light before the performance to be sure that enough of the cosmetic

is applied. (8-117) A variety of preparations have been used by different colleges to remove this cosmetic.

One school used cold cream to remove fluorescent paint, another used soap and water, and a third suggested turpentine or kerosene. It is the author's opinion that cold cream should be tried first, then soap and water, and as a last resort, turpentine.

Luminous paint. Luminous paint must be applied generously and activated under light before use. (8-117) The only school mentioning its removal used a special thinner. At Michigan State College, a small amount of fluorescent paint, mixed with vaseline and applied to face and hands of swimmers, produced no ill effects but achieved a desired weird glow for a special number. Again the swimmer must be cautioned about the use of commercial or metallic paints, as they contain poisonous chemicals.

Metallic paints. A variety of metallic paints have been tried; bronze powder mixed with mineral oil, gold radiator paint mixed with mazola oil, silver body cream (commercially prepared substance), and gold or silver glitter mixed with vaseline. The latter was applied by first rubbing the body with vaseline and then sprinkling on the glitter. This glitter will adhere to the body before entering the water by simply wetting the skin and suit. Both cold cream and soap and water were used to remove these preparations.

Because of the chemicals they contain, these metallic make-ups should not be left on the body any longer than necessary; at the longest, twenty minutes.

Application of Make-up for Televised Watershows

The 1953 watershow at Michigan State College was televised by the college television station for the first time. This made necessary several

alterations in the production, one of them the type and amount of make-up applied to the swimmers.

Plus the twenty floodlights and three large revolving spotlights normally used for the show, the television studio brought in its own lighting equipment, which was composed of several powerful spotlights. Under the intensity of all this light, the swimmers appeared unnaturally pale. Subsequently, the swimmers were instructed to apply "plenty" of make-up. The speech department cooperated by lending some technical assistance.

As a result of this show and because in the near future more watershows may be televised, the following section presenting the sequence of applying make-up for the stage is being included.

"Before putting on any paint, it is necessary to protect the skin from infiltration of colored substances through the pores. This process...consists of putting some protective removing grease on the skin. Any hygienic cold cream will serve the purpose. Wipe off the excess cream with face tissue. Having finished this, you can put on the required foundation grease paint." (7-127-28)

"The best way to apply grease paint is to rub the color in the palm of the hand and then rub it on the face. This keeps the color more on the surface and does not force it into the pores of the skin." (6-51)

"After the foundation is put on the face and neck, lining colors are applied with the fingertips or directly with the stick or pencil." (7-128) The natural structure of the face must be followed when applying make-up to emphasize the features.

"Take some suitable lining color and trace a line on the lower lid of the eye. Begin with the inside corner. The line should follow the edge of the lower lid... and finish at the outer corner. Complete the shadowing of the eye by tracing a line on the upper lid, from the inside-out. The underlining can be done by eyebrow pencils (dermatographs). Then accentuate your eyebrows somewhat, unless they are quite dark and heavy. To brighten the expression of the eyes, put two light red dots at the inner corners of the eye." (7--147-52)

"Except for delineating features, such as lips or eyebrows, never leave a hard line or edge of color on the face. Always soften it down or merge the edges with the finger rubbed lightly along the edge or line." (6-52)

"The next step is the application of rouge. Dry rouge is applied with a puff and moist rouge is applied with the fingertips. Put some spots of red on the cheek bones and blend them until the paint shades imperceptibly into the foundation." (7-149)

"Redden the lips with a suitable color and take care not to extend the color beyond the natural contour of the lips. Cover the painted lips with dry rouge to give them a velvety effect." (7-150)

"The last step is putting on the powder. Shake excess powder off the puff and begin powdering from under the chin proceeding upward. Never apply powder until all the make-up is finished. Although powder comes off in the water, it is used to take the shine off the face." (7--150-52)

Be sure to have plenty of face tissue in the dressing room and several jars of cold cream to remove the make-up.

Appendix E shows an illustration of the application of stage make-up for a person with light skin and light brown hair.

Michigan State College used a Max Factor make-up kit which contained cold cream, several different shades of grease paint, powder, lipstick, eyebrow pencil, rouge, and liner (eye shadow), in various shades.

Special Effects Achieved Through the Use of Make-up

Dark shades of liquid make-up have been used for character make-up such as Indians and Orientals.

Black face numbers are achieved by the application of theatrical black make-up and have been used in many watershows.

Fluorescent paint and invisible ink have also been used successfully. "Black light paint on strips on the arms and legs of divers may be very effective." (5-43) Lillian Burke believes the "fluorescent paint surpasses phosphorescent paint," but Sabina Breck states that "fluorescent paints are expensive and have been found unsatisfactory for use." (2-10) (1-34)

Luminous paint is often applied to give the effect of a skeleton; other designs can be made to suggest an eerie mood. The University of Wisconsin tried luminous paint without much success. Two reasons were given for the failure: first, the pool had a skylight which prevented complete darkness; and second, the cosmetic was not activated under light before use. It was also found expensive.

Summary

It is evident that much more experimentation with make-up in watershows can be done. At the same time, more research is needed, especially concerning the use of metallic preparations on the body.

A more widespread knowledge of the principles regarding the application of make-up is desirable, particularly with the increase in television stations throughout the country and the expectation of color television.

Much valuable information and technical assistance may be obtained by working more closely with the college speech department. They usually have students who are well informed and interested in the use of make-up.

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CHAPTER VI

COSTUMES FOR WATERSHOWS

Costumes are an important part of the watershow, both from the angle of the swimmer and of the spectator. The planning of costumes for each routine is a complex one and involves several factors which will be taken up in this chapter in the following order: principles for selection of the costume, color, light and costumes, the basic costume, costume accessories, headdresses, and care of costumes.

Principles for Selection of Costumes

Budget. The amount of money available to spend on costumes must be considered, although most outfits can be designed within the budget, depending on the ingenuity of the designer. (3-34)

Bathing suits purchased in large quantities may, in some cases, be obtained at a discount from bathing suit manufacturers or wholesale dealers. Suits must be ordered several weeks in advance if this procedure is to be followed. Often arrangements can be made with local department stores for the purchase of swimming suits at a discount.

If the costumes are being made, the problem of obtaining a sewing machine arises if the club does not have one of its own. Sewing machines may be rented locally, or possibly some arrangement may be made with the Home Economics or Dramatics department. If the budget is ample, it might be helpful for the club to purchase its own machine if members continually make their own costumes.

Durability. "Suits must be suited for the media in which they will be used. They must be functional." (3-34) Materials of great variety are on the market, some of which are suited for the water, some of which are not.

Good quality material should be purchased as sun and chlorine are hard on fabrics. (3-34) The material should be sanforized and of a quality that will not ravel excessively or fade.

In order to be functional, suits must be constructed well. It is not advisable to pin on accessories, nor are strapless suits recommended. The costume should be worn in at least one water rehearsal before the performance to test it out.

The following list gives some materials for costumes which have been used in water. Some mention will be made of their advantages and disadvantages as determined after use.

1. Cottons are inexpensive and easy to sew. However, they absorb water readily and may cling to the body or fade rapidly.

2. Cotton jersey has a dull finish which is often desirable. Although it clings to the body and tends to become heavy when wet.

3. Terry cloth has not proven too successful as it becomes heavy when wet and loses its shape.

4. Denim is fairly resistant to water but also becomes heavy when wet.

5. Chintz takes light well when dry and looks good when wet. It is fairly inexpensive, easy to sew, and holds up well in the water. However, it does cling to the body.

6. Rayon emphasizes lines (especially on land), hangs and picks up light beautifully and is not too expensive. On the other hand, it is hard to sew and also clings to the body.

7. Wool materials are not popular as they are expensive and heavy in the water. Some woolens bleach easily and may also be irritating to the skin.

8. Satin picks up light very well, which makes it excellent for trimming. It is hard to sew, however, as it ravels easily.

9. Velvet looks beautiful under light, but it becomes heavy and tends to lose its shape in the water.

10. Nylons shed water easily and stand up well when used for trimming. Most nylons are quite thin, requiring a lining, and many nylons ravel.

11. Burlap has been used without much success for it has little shape and is very heavy when wet.

12. Fluorescent materials may be used effectively for special numbers. The dry goods store variety does not have the intensity of the kind purchased from a bathing suit company or a fluorescent products company. Fluorescent material does not show up well under regular light. It looks best under black light or underwater lighting.

13. Metallic materials catch the light exceptionally well, are good for trim, and will hold up for one or two performances. They have, however, many disadvantages. They are expensive and very difficult to sew. Some tarnish and ravel easily, while others are inclined to become sticky and lose their glitter. They also require an undersuit because of the sharpness and tendency to irritate the skin.

14. Plastics and oilcloth are used mainly for accessories and will be discussed in that section.

Appearance. The costume must not only be attractive to the audience, but it should be pleasing to the swimmer wearing it. "Clever costumes will attract the eye, but they need not be ornate." (1) A simple costume will not distract from the swimming, and these costumes can be used year after year if kept by the club.

The basic principles of costume design should be observed when planning the costumes for each routine.

For heavy girls:

1. Simple, tailored, one-piece suits with V-necklines should be used. (14--119-29) (12-247)

2. Colors should be dark or soft shades. Two-toned suits with a darker back and a light from side tend to minimize the size of the hips. (12-248)

3. Vertical lines tend to lengthen the figure if they are not evenly spaced and if not used for wide panels. Oblique or upward slanting diagonal lines that can be fully seen from the front and that do not extend too far toward the hips will add height. (14--80-83) (12-245)

4. Materials should be dull textured fabrics of light or medium weight and/or materials with indefinite designs. (14-204) (12-248)

For slender girls:

1. Suits should have a slight fullness at the bust or at the hips and curved necklines. Large belts at the waistline or two-piece suits may be worn. (14--119-29) (12-251)

2. Bright colors should be used.

3. Horizontal lines, wide panels, and evenly spaced vertical lines all tend to widen the figure. (14--83-84) (12-251)

4. Glossy or smooth fabrics and heavy materials are good. Materials with definite patterns or designs will tend to widen the figure. (14-203) (12-256)

Sample swimming suit styles for the heavy girl and the slender girl may be found in Appendix E.

Appropriateness. A suit must be appropriate to the theme of the composition and suggest something directly related to it. (7) Fourteen of the thirty-seven colleges used in this survey stated that costumes should be simple and only suggest the theme, not portray it literally. Beulah Gundling, Gertrude Goss, Lillian Burke, Fern Yates, and Theresa Anderson have agreed with this opinion. (7) (6-8) (5-11) (16-118) Miss Iris Andrews of Bowling Green State University believes that the costume should be authentic in pattern, but showy in color.

Color and Light and Costumes

Not only should the color of the costume be considered in its selection, but the effect of colored lights on the material.

The color of the costume is an effective means of establishing the desired mood of the routine. Certain colors have long been associated with certain emotions. (12-134) For example:

"1. Red suggests being exciting, warm, aggressive, strong, affectionate, frank, and evil.

2. Orange shows stirring, cheerfulness, warmth, and liveliness.

3. Yellow suggests stirring, warmth, cheerfulness, sparkling, and sickliness.

4. Green portrays quiet, soft, friendliness, cheerfulness, restfulness, and sickliness.

5. Blue suggests quietness, depression, seriousness, melancholy, coldness, dreaminess, mysteriousness, allure, and reserve.

6. Purple suggests stateliness, dominance, excitement, and warmth.

7. White shows purity and gracefulness." (12-134)

"The lighting used will affect the costume that is worn. A glossy material viewed from certain angles under strong illumination will prevent the reflection of any color except that of the spotlight beam itself. Conversely, materials with a deep pile, when viewed from certain angles, will absorb all the light and appear black." (2-163)

"In dimly illuminated scenes, costumes should be of tints if possible, because they need to reflect more light than the background, while in well-lighted scenes, saturated hues and shades may also be included." (9-370)

For an example of colored lights used with costumes to enhance the effect of the costume, the reader is referred back to pages thirty-two to thirty-four, "Lighting Chairman's Cue Sheet."

It was found at Monmouth College and at Michigan State College that one of the most flattering colors in the water is pink. A beautiful effect may be produced by using pink costumes with pink gelatine on the lights.

The Basic Costume

Commercially-made swimming suits. There is a wide variety of bathing

suits on the market today. They are made in a variety of materials, styles, and colors. Tank suits fall into this classification, and are usually made of cotton jersey or nylon. Appendix B gives a list of several companies that sell both regular swimming suits, fluorescent suits, and tank suits.

Table IX below shows the sources from which thirty-one midwestern colleges obtain their swimming suits.

TABLE IX

SOURCES FOR OBTAINING SWIMMING SUITS FOR WATERSHOWS UTILIZED BY THIRTY-ONE MIDWESTERN COLLEGES

Where Purchased	Number of Colleges
Jantzen	10
Ocean Pool Supply Company	8
Elon of California	5
Catalina	5
Aldrich and Aldrich	4
Rose Marie Reid	3
Gantner and Mattern	3
Mabs	2
J. C. Penny and Company	2
Maurice Handler Originals	1
Adolph Keifer	1
Anywhere	3
Club makes own	2
Girl's own	3
Borrowed	1

Custom-make suits. If the costume is made by the club, there is no end of variety of design that can be obtained, but, as can be seen from the table above, most costumes are purchased. To make one's own suits and costumes requires a certain amount of equipment, and persons with the talent

interest and time to devote to such an undertaking.

If costumes are to be made for the watershow, ample material should be purchased, and patterns should be obtained from pattern books or cut by a designer.

Leotards. Six colleges in this survey mentioned the use of leotards. Two colleges discourage the use of leotards in watershows as they do not consider them appropriate for swimmers. One of these schools feels that swimmers look best in swimming suits and should not have to borrow costumes designed for other media. Brassieres and panties should be worn under the leotards and light-colored leotards need an underlining in the crotch. One school found leotards heavy and inclined to fit poorly when wet. Another school stated that Aldrich and Aldrich make a leotard that does not stretch in water.

Other types of costumes. Shorts of cotton or cotton corduroy, cut-off blue jeans, or long tights may be worn as costumes.

Tights are made of wool, cotton, or nylon. Wool tights are expensive and not practical for use in the water. Cotton tights absorb much water and become heavy when wet. (3-34) Nylon tights are lighter, both in color and in weight when wet. (3-34) One school tried both nylon and cotton tights and found that the nylon lastex were superior to the cotton. Four colleges mentioned the use of long tights.

Long underwear may also be swum in, but it becomes quite heavy when wet.

Costume Accessories

Accessories for costumes are almost infinite in variety of material and design. Special effects achieved through the use of accessories is limited

only by the designer's imagination, and by the material itself.

Accessories may be removed before entering the water or they may be designed for permanent attachment to the costume. One school stated that in most of its routines, accessories were removed before entering the water. Another instructor feels that "swimmers should swim in their costumes and not perform a 'strip tease' before entering the water." (1)

This discussion will be devoted to accessories that can be used in the water.

Some Materials That May be Used for Accessories.

1. Cotton materials of all kinds may be worn in the water if they are of good quality. Cotton in the bulk may be used if soaked in linseed oil to resist water.
2. Satins are good for trim as they catch light well.
3. Flannel may be used but does absorb water readily.
4. Organdy may be shellacked to stand out.
5. Marvelon cloth may be used, but the glitter comes off, and the material becomes sticky.
6. Nylon net sheds water well and holds its shape. It can be shellacked, but this is not necessary.
7. Oilcloth is inexpensive and comes in many colors and patterns, but is hard to work with.
8. Oilsilk is translucent, but can be used.
9. Plastic is heavy and inexpensive. It comes in many varieties of colors and is good for flowers, scarves, and trim.
10. Leather will stand up in water, although it is not pliable.
11. Net curtain material may be shellacked to stand out.
12. Metal sequins are heavy but durable. Plastic sequins often fade and do not last long. Clear sequins may be dipped in special glue and then in glitter powder to acquire a similar effect.
13. Glitter powder may be used on skin with vaseline, or on cloth with rubber cement. It does not last long, however.

14. Fluorescent materials may be used, although the dry goods variety is inferior in quality to commercial products.

15. Fluorescent paint may also be used. More paint is needed on adhesive tape than on the body.

16. Luminous paint may be used on the body or on material. The cloth may be painted and then basted to the costume.

17. Gold and aluminum foil pick up light well.

18. Metallic plastics pick up light well. One commercial variety mentioned was "Hi-Siltrim."

19. Rhinestones or cut glass pick up light better than sequins.

20. Rubber inner-tubing may be cut and used for accessories.

21. Cotton ball fringe may be used for trim, although it absorbs water.

22. Felt may be used for fringing.

23. Pipe cleaners may be used for accessories.

24. Crepe paper may be coated with paraffin to prevent fading and shaped into flowers or other accessories.

25. Plastic icicles and snowflakes may be attached to the costume.

Equipment Used to Attach and Alter Accessories.

1. Sewing machine
2. Rhinestone machine
3. Eyelet punch
4. Pinking shears
5. Needles and thread
6. Scissors
7. Shellac
8. Varnish
9. Lacquer
10. Staples
11. Glue
12. Paraffin
13. Linseed oil
14. Adhesive tape
15. Wire
16. Dye
17. Vaseline
18. Rubber cement
19. Paints
20. Metal curtain hangers

Costume Accessories

1. Jewelry such as rings, earrings, necklaces, bracelets, ankle bracelets may be worn. Silver tinsel can be used for bracelets, and bicycle reflectors may be taped on the fingers. Earrings may not stay on well.

2. Pins and other decorations may be made of metal, plastic, cut glass, or almost any material.

3. Ribbons may fade or come off. Oil cloth in strips, or adhesive tape, will achieve the same effect and be more secure.

4. Buttons are good for trim. Pearl buttons look dressy; metallic buttons are good for a military number.

5. Bells may be worn as bracelets, anklets, or chokers, or may be attached to the costume.

6. Belts may also be worn on the costume.

7. Batons may be used for certain numbers. The tip may be lighted or painted with fluorescent or luminous paint.

8. Gloves and mittens may be used. Gloves can be made from silk stockings; mittens and heavy gloves hold water.

9. Collars and bow ties may be made from almost any material.

10. Flowers may be made from pliofilm or crepe paper. Artificial flowers may be coated with paraffin.

11. Eye, or full face masks may be made from aluminum foil.

12. Skirts, pinafores, aprons, ruffles, and bustles may be wired to stand out and can be made from metallic fringe, nylon net, or almost any other material.

13. Vests may be made of oilcloth, plastic, or other pliable material.

14. Shirts may be worn under suits if they are long sleeved; leave the seams under the arm pit open for freedom of movement.

15. Tails may be made from a black stocking stuffed with crushed plastic material to make it float or from rubber inner-tubing.

16. Scarves of almost any material may be used.

17. Tassels or fringes may be used for trim. Epaulets can be made from fringed gold foil.

18. Hose, opera hose, or tights may be of mesh, cotton, or lisle and dyed in the desired color. Be sure to fasten them securely.

19. Knee socks may be worn.

20. Footies and ribbons on the feet can be used for accessories.

21. Flippers or mermaid fins may be worn. For mermaid fins, use jersey tubing with a plastic tail. Storm window plastic screening may also be used for fins.

22. Water wings may be used for accessories.

Headdresses

1. Swimming caps with or without straps can be worn. They may be purchased in various colors.

2. Hair nets can be used but must be firmly attached.

3. Braids of horsehair or nylon yarn can be worn.

4. Lacquer or vaseline on the hair can be used, but it is hard to remove.

5. Cloth caps may be worn, but might come off if not fastened securely and not make to fit snugly.

6. Cloth and plastic caps over rubber swimming caps can be used.

7. Stocking caps with a cork fastened on the end will make them float.

8. Rubber head bands can be worn.

9. Caps with holes cut in them to make designs can be used.

10. Crowns or tierras may be made from wire or screening and covered with aluminum foil, metallic ribbon, or metallic plastic fringe.

11. Character hats such as engineer hats, prisoner caps, sailor caps, hooded caps, or rain caps may be worn.

12. Ears, horns, antlers, and beaks may be attached to the head. They may have wire or plastic foam cut with a jig-saw, or shellacked cardboard as a base. Bunting has been used for ears, but it soaks up much water.

13. Scarves of all kinds can be worn on the head.

14. Caps may be worn and decorated with: black light material or paint, india ink, nylon organdy, aluminum foil, enamel, paint, sieves sprayed with silver paint, palm tree spikes sprayed with paint, earmuffs, plastic, glitter, tinsel, flannel, oilcloth, pipe cleaners, sequins, real flowers, rubber or metallic flowers, feathers, artificial fruit, coffee cans covered with brown wool, Hi Sil (metallic plastic) trim, chicken wire covered with cloth, Jack O'Lantern cages, acetate sheeting, tin flowers, or mystic tape.

This is by no means a complete list of headdresses or accessories but only a few suggestions. Decorations may be attached to caps with rubber cement, staples, adhesive tape, enamel paint, and airplane glue, beside the usual method of sewing.

The most frequently used materials for costume accessories and headdresses were: plastics, oilcloth, sequins, aluminum foil, paint, and glitter.

More colleges found oilcloth unsuccessful in watershows than any other material. This may be in part because more schools have experimented with it. Oilcloth was found to be bulky, heavy, and hard to work with.

Planning and Care of Costumes

It is ideal to have a costume committee with a chairman to handle the ordering and care of costumes for the watershow. This plan eliminates duplication, wasteful spending, damage or loss of costumes, and relieves the swimmers of an added responsibility.

The following list is the procedure which may be followed by the costume chairman and her committee for the ordering and care of costumes for the watershow.

Costume Chairman's Instruction Sheet

Before ordering:

1. Obtain from the club a list of all the members including their dress and head size, bust, waist and hip measurements, plus height and weight measurements.

2. When the routine directors and swimmers are assigned to each number, obtain a list of swimmers for each number and get suggestions from each director for costumes and colors.

3. All costume suggestions should be sent in from the members or the routine director on a deadline, preferably two months before the show or sooner.

4. Send in for sample materials, colors, and prices. When these samples arrive, test them in the water and test fluorescent materials under black light.

5. For homemade costumes, decide on the patterns which will be used and see that the measurements for each girl are on hand. For light weight costumes, extra material must be ordered for linings.

6. Make a chart for each routine, including: dress and head size for each swimmer, plus style of costume and headdress desired for that particular number.

7. After the costumes to be used are decided upon, figure closely the number of suits, caps, and materials that will be needed and estimate the cost.

8. Get approval from the advisor as to the colors, costumes, and cost.

Ordering:

9. Order the materials early! All of the leading bathing suit companies have offices in the Merchandise Mart in Chicago, but wholesale orders for suits must be sent in before March. An alternate method is to order the suits from a local department store.

10. Order two extra suits for large numbers to provide for overlap or substitutions.

11. Turn over all sales slips immediately to the treasurer.

12. If tank suits are not purchased, but are to be worn, put away the number needed early.

Preparation for the show:

13. All costumes should be completed two weeks before the show. To speed up the completion, the costume chairman may wish to utilize the help of those girls waiting to rehearse their particular routine. Costume accessories that must be hand sewn may be done by the swimmers at this time.

14. Be careful of any changes in the routine, so that a large girl is not put in a small girl's place.

15. Pin a label with the girl's name, size, and routine on each suit and put suits into boxes or hang in one room until the dress rehearsal.

Dress rehearsal and the performance:

16. Place each swimmer's name in alphabetical order on the locker or above the hooks and put their entire costume in the locker.

17. Swimmers should wear clogs and have a towel in front of the entrance. They should sit on towels or be sure their costumes are kept clean.

18. Put up a clothesline in the locker room and hang up all suits after the performance.

    a. Suits should be rinsed.
    b. Suits that might run should not be placed together.
    c. Caps should be replaced in the locker.
    d. If needed, costumes should be pressed before the next performance.

After the performance:

19. Remove all costumes and dry them in a suitable place.

20. Return them to the costume room.

21. Take an inventory of all the costumes.

22. Turn in a duplicate report within one week to the president or advisor, including the inventory, grouped by routines, and the expenditures which may have to be obtained from the treasurer. (4)

Disposal of Costumes

If the club has purchased the costumes, they may be disposed of in two ways. The club may keep all or part of them for use in future watershows, or part or all of them may be sold. If sold, the suits should be marked down according to their condition and the club members may be given first choice on the purchase of these suits.

Summary

The costume should be selected within the budget; it should be functional, swimable, attractive, and simple. Attention should be given to the selection of color and material. Special effects may be achieved through the use of accessories and headdresses, and assistance may often be obtained from the Home Economics or Theater Departments. The purchase and care of the costumes should be well organized and the method of disposal determined.

Above all, the costume should not detract from the swimming!

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CHAPTER VII

ACCOMPANIMENT FOR WATERSHOWS

A watershow would not be a watershow without accompaniment. Next to the swimming itself, accompaniment is probably the most essential part of the production. The swimming and accompaniment go hand in hand; each one serving to enhance the other.

This chapter will discuss the principles for selecting accompaniment, types of accompaniment, sources used for obtaining accompaniment, types of sound equipment used, and the operation of sound equipment.

Principles for Selecting Accompaniment

General:

1. Accompaniment should be chosen that will set the desired mood or help portray the theme. (22-17)
2. The swimmers must like the accompaniment they are to use. Nothing is worse than listening day after day to music that has become tiresome. (21-18) (12-26) (6-46)
3. The music must be swimable. Music that is too fast, "contains an indefinite rhythm or soft passages that cannot be heard by the swimmers should be avoided." (5-7)
4. The routine should not be too long. Three to four minutes is a good length unless the number contains a large group of swimmers. (21-18)
5. The accompaniment should contain a variety of rhythm, thus allowing for a variety of movement.
6. At the same time, the rhythm should be definite.
7. If music is used, it is helpful "to have a melody. An audience seems to be able to participate with the swimmer when they can mentally hum the tune." (21-18) (12-26)
8. "The music should give your audience new ideas." (14-20)
9. A variety of accompaniment adds variety to the production.

For large numbers: (21-18-19)

1. The accompaniment should have a steady, definite rhythm.

2. There should be some strong beats throughout the piece from which the swimmers can take cues.

3. The passages or phrases that are judged to be good for stunts should be long enough to allow the number of girls to complete the stunt.

4. The routine should be from four to six minutes long, as it takes large groups longer to enter the water and get into various formations.

Opening numbers and finales:

1. Powerful and stimulating music should be chosen. (11) This rule can be observed in musical productions where the objective is to relax the audience and enable them to enjoy the entertainment.

Records:

1. Listen to several recordings of the same piece before making your final selection.

2. Do not select the music on the basis of your choice alone. At least two choreographers should listen with you and help choose the music. (16-12)

3. Buy records of good quality as nothing is worse than grating music. (21-18)

4. Purchase at least two copies of the same record; one for practice and one for the performance. (18-65) (5-7)

Types of Accompaniment

None. Movements of the swimmers in the water may be combined to form interesting patterns, as was demonstrated by studies done by Lois Carrell of Mills College. (3-614-15)

> One of the first experiments was a study in legato movement which was a composition of slow, sustained almost noiseless activity, (necessarily much of it underwater).... For contrast we developed another, which was a composition of rapid, brisk character with much activity and of staccato sounds. The atmosphere...was achieved through fast, propulsive movements. In another one...the sound effects were made by three girls moving down the center of the pool

> and a large number of girls holding on to the scum gutters. The main patterns were set by working one arm in wide circles just under the water surface and by accelerated flutter kicks and powerful lunges of the body out from the side of the tank. In all of the work no music seemed necessary because the sounds produced by the movements in the water seemed too complete to need augmentation as well as too fascinating to be lost by musical accompaniment. In short, the movement of the body in the water with its resultant sights and sounds was adequate.

Movements may be done with a minimum of sound or with many sounds. Some of the possible sound effects produced this way are:

1. Kicking - fast flutter kicks can be used to simulate the sound of the surf, a water fountain, as a background for other movements, or as entrances and exits.

2. Swishing - by sweeping the arm in a circle on the surface of the water or just below the surface, interesting sounds can be achieved.

3. Slapping the hand on the surface of the water. (18-67) (19-3) (23-114)

This medium has not been experimented with extensively. A more thorough exploration would no doubt uncover new possibilities and combinations.

Percussion. Most people are inclined to consider percussion and drums as being synonymous. It is true that drums are a percussion instrument; however, there are a variety of other instruments that fall into this classification.

Marimbas and gourds will simulate a Latin American atmosphere; clicking sounds may be produced by Temple blocks, wood blocks, and castanettes; metallic sounds may be produced with gongs, cymbals, and metal bowls; and high tinkling sounds can be achieved by using bells and triangles.

Percussion instruments add interest and variety to numbers if not overused. "It provides additional rhythmic experiences for the swimmers and increases the creative scope of the activity." (18-67)

> When using percussive instruments in a number, work out a "skeleton form" in the water so that the accompaniment may be planned. The actual musical structure is quite important. Although the water form may be composed first, it is necessary to compose the accompaniment on certain standards to have it in acceptable musical form. (18-67)

> The beater should be held lightly in the hand. To bring out the tone of the instrument, the beater should rebound from the surface that is struck. Students should be instructed to avoid pounding on the drums. (17-276)

Disadvantages of percussion instruments:

1. A skilled accompanist who can handle the instruments effectively is necessary, but not always possible to find.
2. If more than one instrument is used, more than one accompanist may be required.
3. A consistent rhythm may be difficult to obtain, if the routine is not recorded on tape or wire, or wax. (18-67)

Singing. Another type of accompaniment that will add dramatic interest to the watershow is singing. Singing can be done by a soloist, a duet, a trio, a quartet, or a choir. "It has several advantages over recordings in that the musical arrangement of a piece can be adapted to the situation and musical selections and parts of pieces that are not available on records may be sung." (23-5) It also "challenges advanced groups with choreography or composition problems." (18-66)

> The accompaniment must be chosen carefully. Think of rhythm, length, content. The accompaniment must be analyzed carefully so that the choreographer will have a structure of tempo and rhythm in which to compose. Check the acoustics carefully, placing the group where they can be best heard. The director should be able to see both the choral group and the swimmers. (18-66)

"An adequate and accurate recording would have to be made for purposes of practice and of creating an interpretive routine." (21-18) "The singers must be sure to keep the rhythm and tempo even and definite, and to sing the selection so that it is enjoyable yet not distracting for the swimmers as well as the audience." (23-5)

Disadvantages of singing:

1. Requires a great deal of coordination between the swimmers and singers unless the routine is recorded for practice, which lessens the danger.

2. The more complex composition may be difficult for average or beginning swimmers.

3. The rhythm may not be constant throughout rehearsal, if it is not recorded.

4. The swimmers may have difficulty in hearing the singing. (18-66)

5. Swimming pool rooms are often acoustically unsuitable for chorale groups.

Speaking. Spoken voices or verse speaking choirs may also be used. The above principles for singing apply also to speaking.

Live instruments. Individual instruments such as violins, pianos, ukeleles, organs, and accordians have been used for special numbers in a watershow. Larger groups of instruments such as combos, string quartets, and orchestras may also be used.

Advantages of live instruments:

1. "Music can be scored to suit the swimming composition.

2. Live instruments will lend much atmosphere to an aquacade." (21-18)

3. The possibilities for change of tempo, mood, and rhythm are excellent. (14-20)

4. "The creative scope of the activity is increased.

5. Provides possibilities for good correlation with other activities in programs, especially the music department." (18-66)

If the club decides to use live instruments for one or more numbers in the watershow, the musicians should be contacted well in advance of the production. If the swimming routine has not yet been composed, have the routine director work with the musicians, giving them the basic ideas and mood desired.

> Do the music composition before you start working with the swimmers. As soon as the music is written, put everything on the piano or on records. Rehearse an orchestra alone, rehearse swimmers alone and to the records. (14-20)

> Do as much as possible before the first combined practice. Check the accompaniment before the musicians come to practice with the swimmers. Place the musicians where the conductor or the musicians can see the swimmers. Be careful of getting them too close...because of splashing. In numbers which use one or two musicians, plan for their entrance and exit. (18-67)

Many student musicians will consider it a challenge and a compliment to assist with the planning of accompaniment for a watershow. (6-20)

Disadvantages of live instruments:

1. "The musicians must play the same piece of music in the same way in the actual performance as was done for the recording.
2. The orchestra must be of sufficient calibre to insure variety within a theme." (21-18)
3. If musicians have to be engaged from the outside, it may be too expensive.
4. The final accompaniment may not be available until late in the practice period.
5. If performing for an indoor performance, the musicians may object to having their instruments exposed to the pool atmosphere. Humidity is not good for string instruments and pianos.
6. The composition may have to be worked out with the accompaniment in a minimum number of practices.
7. If the deck space is limited, no place may be left for the musicians or instruments. (18-67)

There are also special sound effects that can be produced with commercial or improvised instruments that are commonly used in the theater. For a detailed description of these, the reader is referred to Modern Theatre Practice by Heffner, Selden, and Sellman. (9-410-18)

Records. The most commonly used form of accompaniment is recorded music. It has many advantages over other types of accompaniment.

Advantages of records:

1. "The phonograph is convenient to use, produces varying degrees of volume, and keeps an even rhythm.
2. A phonograph equipped with a speed regulator permits a larger selection of tunes for swimming, because the tempo of the music may be adjusted to suit the requirements of the swimmers." (23-5)
3. "Records may be purchased in an almost unlimited variety of rhythms, types of music, and orchestration.
4. Records are readily available.
5. The accompaniment is consistent for practice and performance.
6. With unbreakable records, one always has accompaniment.
7. Often casually hearing a record will suggest a routine.
8. Audience familiarity with accompaniment may be helpful, if not overdone." (18-65)
9. Good recordings can be used over and over, year after year. (8-3)
10. Records are relatively inexpensive.

Disadvantages of records:

1. "May limit creativeness.
2. Sometimes difficult to find the exact type of music one wants.
3. A machine is necessary. Many of these do not have an adjustable turntable.
4. Sometimes difficult to get electrical outlets for outdoor work.
5. Many records are breakable.
6. Records wear out." (18-65)

Types of records. Almost every type of record has been used as accompaniment for watershows. Some different kinds are: (1) vocals, including operas, semi-classical and musical comedy, popular, religious, and folk (folk is used loosely to include square, folk, cowboy, hill billy, or western music); (2) instrumentals, including classical and semi-classical of all kinds, film and musical themes and overtures, popular of all kinds, marches, dance music, and folk; and (3) cut records. Appendix D gives a list of arrangers, composers, and music that have recently been used in watershows.

The following table shows the arrangers most frequently used by twenty-seven midwestern colleges.

TABLE X

MOST FREQUENTLY USED ARRANGERS OF MUSIC USED IN WATERSHOWS BY TWENTY-SEVEN MIDWESTERN COLLEGES

Arranger	Number of Colleges
David Rose	10
LeRoy Anderson	6
Andre Kostelantz	7
Les Baxter	4
Boston Pops	4
Hugo Winterhalter	4
Mantovani	3
Glenn Miller	3
Ray Anthony	2
Les Brown	2
Les Paul	2
Henri Rene	2
Morton Gould	2
Paul Weston	2

Nine colleges stated that they had no preference, that they used a variety of music depending on the theme of the show and the mood desired for each routine. Twenty of the forty colleges from which information was obtained, stated they often cut their own records.

Four colleges stated that they used music of every type, and George Jean Sperry and Gertrude Goss believe that both classical and popular music can be used to advantage. (19-3) (4-8) Fern Yates and Theresa Anderson state that "many compositions of a more serious nature than popular music offer good possibilities for musical accompaniment." (23-6) At Ohio State University the "trend was toward modern music fairly well known but not beaten into the ground. We tried to use finales of broadway shows." (11)

Regarding the use of classical and popular music, June Taylor says:

> Depending on the audience and swimmers, it is usually wise to avoid too classical or advanced music which is difficult to understand or absorb when heard just once. It is usually wise to avoid "hit parade" music if the routine is to be used more than an immediate occasion, for "hit parade" music is dated. (21-18)

Frank Martin believes that we "need music designed for synchronized swimming. We do not want dissonant and inharmonious music with which modern dance has identified itself." (16-12) Beulah Gundling says that "it would be ideal to have music composed specifically for synchronized swimming. However, it is seldom possible to have this done." (6-46)

"Once a record or records have been chosen, these can be altered or changed with the aid of a tape recorder and a recording cutting machine." (21-18) "This kind of record may allow the exact arrangement you want and will give you a consistent arrangement to practice with if the music is originally composed for a given routine." (18-66) Unfortunately the tone

is not always as clear and the life of such recordings is fairly short. "Care should be taken to match tone and type of orchestration and other aspects as that a cut or join is not noticeable." (21-18) Technical help with cutting records may usually be secured from the speech or music departments, Audio-Visual Aids service, or the local television or radio stations.

There seem to be many opinions regarding the type of records that are best to use for watershows. Eight colleges stated that they preferred records without vocals. Fern Yates, Theresa Anderson, Beulah Gundling, June Taylor, and Lillian MacKellar agree with this opinion. (23-6) (5-7) (21-18) (12-26) June Taylor has summed up some of the objections to vocal recordings very well. She says:

> Vocal renditions are rarely advisable, firstly because the vocalist is featured and the music is the background or is subordinated. Also a vocalist is often distorted beyond recognition when tuned loud enough for swimming purposes. There are exceptions to this. Sometimes swimmers wish to interpret words rather than synchronize their actions to music, in this case special care should be taken to insure clarity. (21-18)

However, vocals have been used, apparently with success, by Mrs. Gordon Bennett of Evansville, Indiana, and by Bernice Hayes of Wright Junior College in Chicago. (2-12) (8-3) "Many clubs have also used vocals for variety." (10-30)

To summarize, the types of accompaniment used for watershows by colleges in the midwest are shown in the table on the following page.

TABLE XI

TYPES OF ACCOMPANIMENT USED IN WATERSHOWS BY THIRTY MIDWESTERN COLLEGES

Type of Accompaniment Used	Number of Colleges
Drums	15
Records only	8
Other percussion	6
Choir	5
Smaller singing groups	4
Orchestra	3
Piano	3
Speaking voices	3
Accordian	1
Hawaiian orchestra	1
Organ	1
String ensemble	1
Violin	1
Ukelele	1
Xylophone	1

All of the above colleges, with the exception of those using an orchestra or records only, supplemented their other routines with records.

Of the special types of accompaniment used in the above table, one school found that speaking voices were only fairly effective, one school stated that percussion should be used sparingly, and one school found that a piano was effective only if the acoustics were excellent.

Sources for Obtaining Accompaniment

The following table shows the sources for obtaining accompaniment used by the colleges that have tried types of accompaniment other than records.

TABLE XII

SOURCES FOR OBTAINING LIVE ACCOMPANIMENT UTILIZED BY SEVENTEEN MIDWESTERN COLLEGES

Source	Number of Colleges
College	10
Own	5
Dance department	4
Music department	2
Professionals	1

It may be assumed that many of the colleges merely stating their accompaniment was obtained from the college, utilized the music department. Four colleges found that live instruments were too expensive, or more specifically, that the wages paid to musicians were too costly.

The Production of Sound

Types. The two most commonly used methods of producing sound, if live instruments are not used, are phonographs, with or without amplifiers, and tape recorders.

Most schools use phonographs, but in recent years more persons have experimented with tape recorders. George Jean Sperry does not advise tape recordings because of lack of durability. She also found that it was hard to pick up on the loud speaker system and that the sound was not produced clearly. (20-1) At Wright Junior College in Chicago, a tape recorder was tried. They found it easy to manipulate but generally unsatisfactory as the quality of the sound was reduced. (7)

Frank Martin of the American University has used a tape recorder with success and a very detailed description can be obtained by referring to his article in The Synchronized Swimmer. He says:

> A tape recorded show supplied marvelous snap and precision to the dress rehearsal; it allowed a remarkable effective sound hook-up for the show; it was possible to start the show on time, and there was no large sound staff stumbling over each other in the dark or jarring the table to make the records skip. (15-6-7)

Jean Maeys of Northwestern State College in Louisiana has also used a tape recorder effectively, and a detailed description of how it was used for their watershow may be found in The Synchronized Swimmer. She says:

> No swimmer could swim in two successive numbers and become over-tired; each swimmer had to be ready to swim at her or his designated cue; and finally, lights, music, and swimmers were "synchronized" to the exclusion of those uncomfortable hot lulls of which water show audiences frequently and justifiably complain. (13-3)

Miss Lora Rossel of Hamline University in Minnesota tried a tape recorder for the first time in her 1954 watershow with little success. This was because "the speaker in the recorder was too small for the pool room. This situation is not a permanent obstacle and tape recordings are highly recommended if the quality of the tone can be satisfactorily reproduced.

Three colleges in this survey highly recommended tape recordings because of sound, smoothness, and general effectiveness.

Two colleges recorded their accompaniment for watershows on tape for the first time in 1954, and one school was planning to experiment with a tape recorder the next year.

Six colleges use underwater speakers successfully, although two of these colleges found that they are not watertight. The speakers must be returned to the company where they were purchased to be repaired or else repaired at the school. If the repairing is done locally, the microphones must be taken apart, have the rust scraped off all metallic parts, and resealed with a non-hardening waterproof glue. One college does not use underwater speakers as no satisfactory types have been found, but two of the six colleges that use underwater speakers state that this device improves the synchronization of the swimming with the music.

The following table shows the types of sound-producing equipment used by the colleges in this survey.

TABLE XIII

TYPES OF SOUND PRODUCING EQUIPMENT USED BY FORTY-ONE MIDWESTERN COLLEGES FOR WATERSHOWS

Equipment Used	Number of Colleges
Phonograph with amplifiers	31
Tape recorder	8
Phonograph	7
Underwater speakers	6
None	2
Wire recorder	1

In regard to the above table, the two colleges that use no sound equipment orchestrated their entire production.

Appendix B gives a list of dealers and manufacturers where sound equipment may be obtained.

Operation. The determining factor in the production of sound will be the acoustics of the pool. Some colleges that have a small pool room and good acoustics will not need to use any amplifiers other than the adjustment of volume on the phonograph or tape recorder. However, many more colleges have problems with their acoustics in the pool room. To overcome this problem, the Toledo Club of Toledo, Ohio, installed acoustical tile "Fiberglas" over their entire ceiling. A more detailed description may be obtained by referring to the Beach and Pool. (1-11) It was found at the University of Illinois that in Huff Gymnasium pool, the sound was increased somewhat in tempo because of the high ceiling and large pool room. This difficulty was overcome by a victrola with an adjustable turntable.

The table below shows how the colleges in the survey obtained sound operators for their watershows.

TABLE XIV

SOURCES FOR OBTAINING SOUND OPERATORS FOR WATERSHOWS UTILIZED BY FORTY MIDWESTERN COLLEGES

Operated by:	Number of Colleges
Students	16
Club members	9
College maintenance crew	9
Male students	4
Engineering students	2
Men's swimming club	2
Audio-Visual Aids department	2
Drama department	2

The following are some suggestions which will be helpful if a phonograph is used to produce the sound for the watershow.

1. The operator should know when to begin each record, where to put it on and take it off, and where the volume is to be changed. He should also know how to handle records, for example, never to touch the threads of the record.

2. If an adjustable turntable is used, the operator should have a written list of each record speed.

3. "The machine should be tested to see if the permanent needle is as clear as a new inexpensive non-permanent needle. Sometimes a cheaper needle used for only one or two numbers gives better results for performances.

4. The disc jockey should have a list of the records and their order and should practice putting them on and taking them off without scratching.

5. The operator should be able to see entrances and exits or there should be people assigned to check with the operator to insure correct starting.

6. If performing away from your home situation, check all electrical arrangements well ahead of time, particularly if it is to be an outdoor performance.

7. For outdoor performances, electricians can frequently 'tap' wires to permit the use of electrical equipment.

8. Check general acoustics. Have music loud enough for the swimmers to hear, but not deafening to observers." (9-65)

9. Caution should be taken when handling the phonograph to prevent any shock, by the use of a towel, tape, or other preventive safety measure.

Do not hesitate to seek advice from persons well-trained in the use of electrical equipment. Technical assistance may be obtained from the college electricians, electrical engineering students or staff, audio-visual aids service, television or radio departments, music, or speech departments.

Summary

The most commonly used types of accompaniment are records and percussion instruments. Although several persons have mentioned the advantages of music composed especially for watershows, the per cent of colleges that have tried this is small.

One-half the schools in this survey have cut their own records and a majority of them prefer non-vocal, semi-classical records. (Cut records refer to accompaniment recorded on a wax disc which is similar to that used for commercial records)

Tape recorders have many possibilities and more colleges are experimenting with them every year.

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CHAPTER VIII

CONCLUSIONS AND RECOMMENDATIONS

This chapter will present the conclusions reached as a result of this survey and recommendations will be based on the findings of the study. A summary of the material concerning lighting, make-up, costumes, and accompaniment was placed at the end of each of the four preceeding chapters.

Conclusions

Lighting:

1. The most commonly used lights for watershows are spotlights and floodlights.
2. Black light is used often to produce special lighting effects.
3. The majority of schools either own their lights or borrow them from the speech department.
4. The lights for watershows are generally operated by the maintenance department, club members, or students.
5. A majority of schools use a combination of individual operators and master control boards to operate their lights for watershows.
6. Very few schools utilize the engineering department for experimentation and technical assistance with lighting.

Make-up:

1. The most commonly used types of make-up are grease paint and black light cosmetic.
2. Very little experimentation has been done with make-up.

Costumes:

1. Very few swimmers make their entire costume.
2. Most swimmers and swimming instructors prefer simple functional costuming.
3. There have been many special effects tried with costuming.

Accompaniment:

1. The types of accompaniment most often used for watershows are records and percussion instruments.

2. Most swimmers and swimming instructors prefer non-vocal, semi-classical records.

3. Fifty per cent of the colleges in this survey have cut records at one time or another.

4. Live accompaniment is generally secured from the college.

5. Very few colleges in this survey use underwater speakers.

6. Although phonographs with amplifiers are most often used to produce the sound in a watershow, the use of tape recorders is increasing.

7. The majority of colleges have students operate their sound equipment.

General:

1. Swimming is considered more important than lighting, make-up, costumes, and accompaniment, and the latter should enhance and not distract from the swimming.

Recommendations

It can be seen from the above conclusions that there is room for much more experimentation with lighting, make-up, costuming, and accompaniment. Many of the principles which apply to the theater may well be studied for their application to watershows.

Much more can be done with special lighting effects, particularly with the use of light and colored light on make-up and costumes.

More research is needed concerning the use of metallic cosmetics on the body, and principles of the application of make-up should be studied, especially if there is possibility of a televised watershow.

The effect of colored light on costumes needs more experimentation as do the principles of costume design and the use of materials in the water.

The advantages of originally composed music appear to make this type of accompaniment desirable, yet few colleges compose their own music for watershows. Other types of accompaniment such as movements of the swimmers, and singing and speaking groups have not been fully utilized. The use of tape recorders as sound-producing equipment, also needs further research.

Watershows are still in their infancy but development and refinement will be faster with the pooling of ideas and technical assistance from persons well-trained in the art of lighting, make-up, costume design, music, and sound production.

It is recommended that the swimming club utilize as many other departments in the college as possible for aid in the production of its shows. By this means, more students will profit and learn from experiences gained in this field.

Departments recommended for assistance include:

1. Dance - principles of movement and use of percussion instruments.
2. Art - principles of color.
3. Home Economics - principles of costume design.
4. Music - accompaniment, sound production, and the cutting of records.
5. Speech - lighting, make-up, possibly sound production, and the cutting of records.
6. Television and Audio-Visual Aids - lighting, sound production, and the cutting of records.
7. Engineering - lighting and sound production.

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BIBLIOGRAPHY

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An up to date but technical book dealing with all kinds of lighting for the stage and theater. Some knowledge of stage lighting and principles of electricity are necessary for full understanding.

Curtis, Katharine W., Rhythmic Swimming, (A Source Book of Synchronized Swimming and Water Pageantry), Minneapolis: Burgess Publishing Company, 1942. 133 pp.
The first book on synchronized swimming to be printed. Gives games, stunts, and pageantry that can be easily used. The material has been culled from actual experience. Outdated in many ways.

Heffner, Hubert C., Samuel Selden and Hunton D. Sellman, Modern Theatre Practice, (A Handbook for Non-professionals), Third edition, New York: F. S. Crofts and Company, 1946. 501 pp.
This is an excellent book for the layman, as it is written in a clear and non-technical style. Organizing, directing, and rehearsing plays is discussed. Also, lighting, scenery, costumes, and make-up is covered adequately. There is a very good list of dealers and manufacturers of stage materials given.

McCormick, Olive, Water Pageants, Games, and Stunts, New York: A. S. Barnes and Company, 1933. 138 pp.
This is an old book with much outdated material. Complete descriptions of sample water pageants, water games, and water stunts, including costumes, characters, music, and props.

Morton, Grace Margaret, The Arts of Costume and Personal Appearance, Sixth edition, New York: John Wiley and Sons, Ltd., 1946. 400 pp.
A good book dealing with the aesthetic aspect of dress. It includes material on styling, color, and costumes, textures and costumes, temperament and costumes, and body structure and costumes.

Parsons, Charles S., A Guide to Theatrical Make-up, Second edition, London: Sir Isaac Pitman and Sons, Ltd., 1934. 84 pp.
This book is concerned with specific problems in make-up, and is not too helpful for the layman.

Radir, Ruth Anderson, Modern Dance for the Youth of America, New York: A. S. Barnes and Company, 1948.
This is a book for the teacher of modern dance, and includes a teaching progression, specific exercises, organization of dance shows, and the use of percussion instruments.

Ryan, Mildred Graves, and Velma Phillips, Clothes for You, New York: D. Appleton-Century Company, Inc., 1947. 546 pp.
Gives the principles of good appearance, types of clothing, economics of clothing, and basic information on the construction of clothing.

Spears, Betty, Beginning Synchronized Swimming, Minneapolis: Burgess Publishing Company, 1950. 90 pp.
A good book for practical use; excellent descriptions and illustrations of stunts. It covers the beginning material from the standpoint of beginning to teach and use it. The text does presuppose a familiarity with basic strokes and techniques. There is a helpful section on accompaniment and composition, and the organization of watershows.

Strenkovsky, Serge, The Art of Make-up, New York: E. P. Dutton and Company, 1937. 350 pp.
Although not a new book, it contains a very comprehensive study of make-up; principles, application, and special problems.

Yates, Fern and Theresa W. Anderson, Synchronized Swimming, New York: A. S. Barnes and Company, 1951. 140 pp.
A well illustrated text showing the many stunts used in synchronized swimming. The patterns, composition, staging, and programs are covered adequately.

B. PERIODICALS

"Acoustical Tile," Beach and Pool, XXV (July, 1951). P. 11.
Describes the installation of Fiberglas tile at the Toledo Club, Toledo, Ohio.

Baldwin, Betty, "Let's Synchronize," Beach and Pool, XXIII, (June, 1949). P. 14.
Gives some suggestions for starting synchronized swimming, groups, plus a few ideas on types of music and costumes.

Bennett, Mrs. Gordon, "A Salute to Doris Day," The Synchronized Swimmer, III (June, 1954). P. 12.
Description of their watershow by the above name, including music, costumes, and continuity.

Breck, Sabina June, "A Creative Approach to Water Ballet," Official Aquatics Guide, 1947 - 1949. Pp. 33-34.
Exposure of students to different types of accompaniment, the sources of ideas for design in order to enable the student to compose his own ideas for routines after acquiring the basic stunts.

Burke, Lillian A. C., "Aquatic Pageant Procedures," The Journal of the American Association for Health, Physical Education and Recreation, XVIII (June, 1947). Pp. 372-74.
Excellent article showing the development of the pageant from the first expressed wish to the final production.

_____, "Organizing and Producing an Aquatic Pageant," Beach and Pool, XXI (October, 1947). Pp. 10-11.
A good discussion of how to organize and produce a watershow including costuming, music, and lighting, plus other technical aspects of production.

Carlson, Joan, "Black Light Your Water Ballet," The Journal of the American Association for Health, Physical Education and Recreation, XXXVI (March, 1954). Pp. 19-20.
The author tells of the many ways black light may be used in watershows; also materials that are usable under ultra-violet rays.

Carrell, Lois, "Water Studies: Experiments in Potential Art Form," The Journal of the American Association for Health, Physical Education and Recreation, XI (December, 1940). Pp. 614-15.
Experiments with movements and rhythms in the water which were developed into compositions with movements of the swimmers used as accompaniment.

Crouse-Hinds Company, "Underwater Lighting for Swimming Pools," Beach and Pool, XXV (May, 1951). Pp. 10-11.
Description and diagrams of the installation of wet niche and dry niche underwater permanent lights.

Dannenhirsch, Mrs. Doris, "A Letter," The Synchronized Swimmer, II (April, 1953). P. 18.
An article giving some ideas for costume accessories.

Goss, Gertrude, "The Water Show: Fun for Swimmer and Audience," Beach and Pool, XXIV (November, 1950). P. 8.
Explains the advantages of music used in connection with swimming. Gives some methods of making simple routines appear more effective and includes a floating formation for sixteen girls.

_____, "Recreational Activities in the Aquatic Setting," The Synchronized Swimmer, II (February, 1953). Pp. 8-9.
Gives some objectives and program content of recreational activities in the water. Some principles of costumes and lighting for shows is given; also a suggest bibliography for aquatic games and stunts.

Gundling, Beulah, "How to Compose Synchronized Swimming Routines," The Amateur Athlete, XX (February, 1949). P. 13.
Good discussion of the construction of a routine from the selection of the records and performers to the revisions that are always necessary.

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Reprint of the article on the preceding page.

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Accurate presentation of the judging, composition, and costuming of solo synchronized swimming.

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Ideas and records that Wright Junior College have used in connection with music for watershows.

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Gives some suggestions for costumes and lighting for watershows.

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A complete description of the continuity, tape recording of music, stunt diving, costumes, scenery, props, posters, programs, and publicity for the 1953 watershow at Northwestern State College.

Martin, Frank Jr., "Synchronized Choreography," Beach and Pool, XXVI (November, 1952). P. 12.
Discussion on how to select records and choreograph the swimming routines.

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An accurate and detailed description of how American University developed their accompaniment and continuity and recorded it on tape for the show.

Massof, William, "Promoting an Aquatic Show," Beach and Pool, XXI (December, 1947). P. 8.
This article deals mostly with the publicity involved in putting over a watershow. Also a little material on organizations is given.

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Places stress upon the development of synchronized swimming by taking into consideration the swimming ability of the participants.

Olsen, Norma, "Excerpts from a Letter," The Synchronized Swimmer, II (March, 1953). P. 5.
Gives suggestions for make-up and accompaniment and portable underwater lights.

Sperry, George Jean, "The Use of Recordings as Accompaniment to Synchronized Swimming," Official Aquatics, Winter Sports, and Outing Activities Guide, 1949 - 1951. Pp. 16-18.
Tells how to create a routine that is synchronized with the music, rather than using the music as a background. Gives tips on how to analyze the music and avoid monotonous repetition of movements.

Vaught, Martha J., "Lights On," The Journal of the American Association for Health, Physical Education and Recreation, XI (February, 1940). Pp. 92-93.
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C. PUBLICATIONS OF LEARNED ORGANIZATIONS

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Berquist, Nancy, "Costumes for Water Shows," Fourteenth Annual Official Report of the Women's National Aquatic Forum, Hollywood, Florida, 1953. Pp. 34-36.
Gives the principles for selecting costumes, types of costumes, materials, accessories, head gear, plus hints on construction and sample costumes.

Gundling, Beulah, "Synchronizing Water Actions to the Accompaniment," Eleventh Annual Official Report of the Women's National Aquatic Forum, Hollywood, Florida, 1950. Pp. 45-47.

Hass, Carole, "Costuming for Watershows," Twelfth Annual Official Report of the Women's National Aquatic Forum, Hollywood, Florida, 1951. Pp. 21-22.
Tips for the school with meager facilities in the use of accessories, hairdos, props, and other special effects.

"How We Do It in the Colleges," Twelfth Annual Official Report of the Women's National Aquatic Forum, Hollywood, Florida, 1951. Pp. 26-30.
Discussion of swimming clubs on the college level, including faculty advisors, tryouts for the club, organization, shows, cuts allowed, maintaining interest, accompaniment and other questions.

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Ideas from different schools about show themes, costumes, aids in production, construction of routines, and publicity.

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Discussion of execution, composition, music, synchronization, showmanship, and skills in synchronized swimming routines.

Malm, William P., "Accompaniments for Synchronized Swimming and Their Analysis and Application," Report of the Third Midwest Aquatic Forum, Champaign: University of Illinois Terrapin Club, January 13, 1951. Pp. 20-21.
A discussion of the advantages, possibilities and use of originally composed music.

"Materials for Teaching Dance," American Association for Health, Physical Education and Recreation, National Section on Dance, Washington, D. C., 1952. 53 pp.
A selected list of recordings for modern dance, suggested piano music for modern dance, modern dance bibliography, recordings for children's dance, children's dance bibliography, and articles on dance.

"Panel Discussion," Report of the Third Midwest Aquatic Forum, Champaign: University of Illinois Terrapin Club, 1951. Pp. 14-16.
A discussion panel on watershows in the form of questions and answers about themes, technical aspects of production, routines, costuming, and properties.

Sperry, George Jean, "Accompaniment and Composition of Synchronized Swimming," Report of the Second Midwest Aquatic Forum, Lafayette: Purdue University, February 24, 1950. Pp. 1-4.
Examples of music, analysis of music, and creation of the routine.

_____, "Introducing Synchronized Swimming into the Swimming Program," Report of the Second Midwest Aquatic Forum, Lafayette: Purdue University, 1950. P. 1.
Hints on how to teach beginning synchronized swimming.

Taylor, June D., "Synchronized Swimming, Composition and Musical Accompaniment," Fourteenth Annual Official Report of the Women's National Aquatic Forum, Hollywood, Florida, 1953. Pp. 16-22.
Good discussion on what to look for in music and how to select accompaniment. Tells how to build a routine.

Turner, Margery, "Composition and the Creative Approach in Synchronized Swimming Activities," Report of the Third Midwest Aquatic Forum, Champaign: University of Illinois Terrapin Club, 1951. Pp. 17-20.
Gives some of the factors that make up a good composition. Illustration given of how dance background develops creativeness in composing swimming routines.

D. UNPUBLISHED MATERIAL

Andrews, Iris, oral communication, March 12, 1954.

Bintz, Wesley, oral communication, June 5, 1954.

Bullock, Doris, oral communication, December 18, 1953.

Gareis, Fritzie, written communication, February 1, 1954.

Gundling, Beulah, written communication, January 12, 1954.

Hayes, Bernice, oral communication, December 21, 1953.

Hooton, Mary, oral communication, March 28, 1954.

Kerth, Dorothy, oral communication, September, 1953 - June, 1954, inclusive.

Kocher, Catherine, written communication, February 24, 1954.

Kuhn, Alfred, oral communication, March 30, 1954.

Maeys, Jean M., written communication, February 25, 1954.

Martinelli, Elnora, oral communication, March 19, 1954.

Potter, Adeline, oral communication, December 23, 1953.

Seller, Peggy, written communication, January 28, 1954.

Wallace, Esther M., written communication, December 10, 1953.

Waters, Laura, oral communication, July 2, 1954.

APPENDIX

MICHIGAN STATE COLLEGE
East Lansing, Michigan
April 12, 1954

Dear Madam:

I am trying to get an overall survey of some of the current practices in the production of swimming shows and would appreciate your cooperation in filling out and returning the following questionnaire within the month. Very little material has been collected to date in this particular area, and as work toward my Master's degree at Michigan State College, I hope to remedy this situation.

Unless otherwise stated, please check all situations that apply to your own watershows.

1. Pool dimensions.

Width___feet, length___feet, depth___feet, shallow end, depth____ feet, deep end, depth___feet, height of ceiling___feet.

2. Location of seats.

One side____, two sides____, one end_____, both ends____.

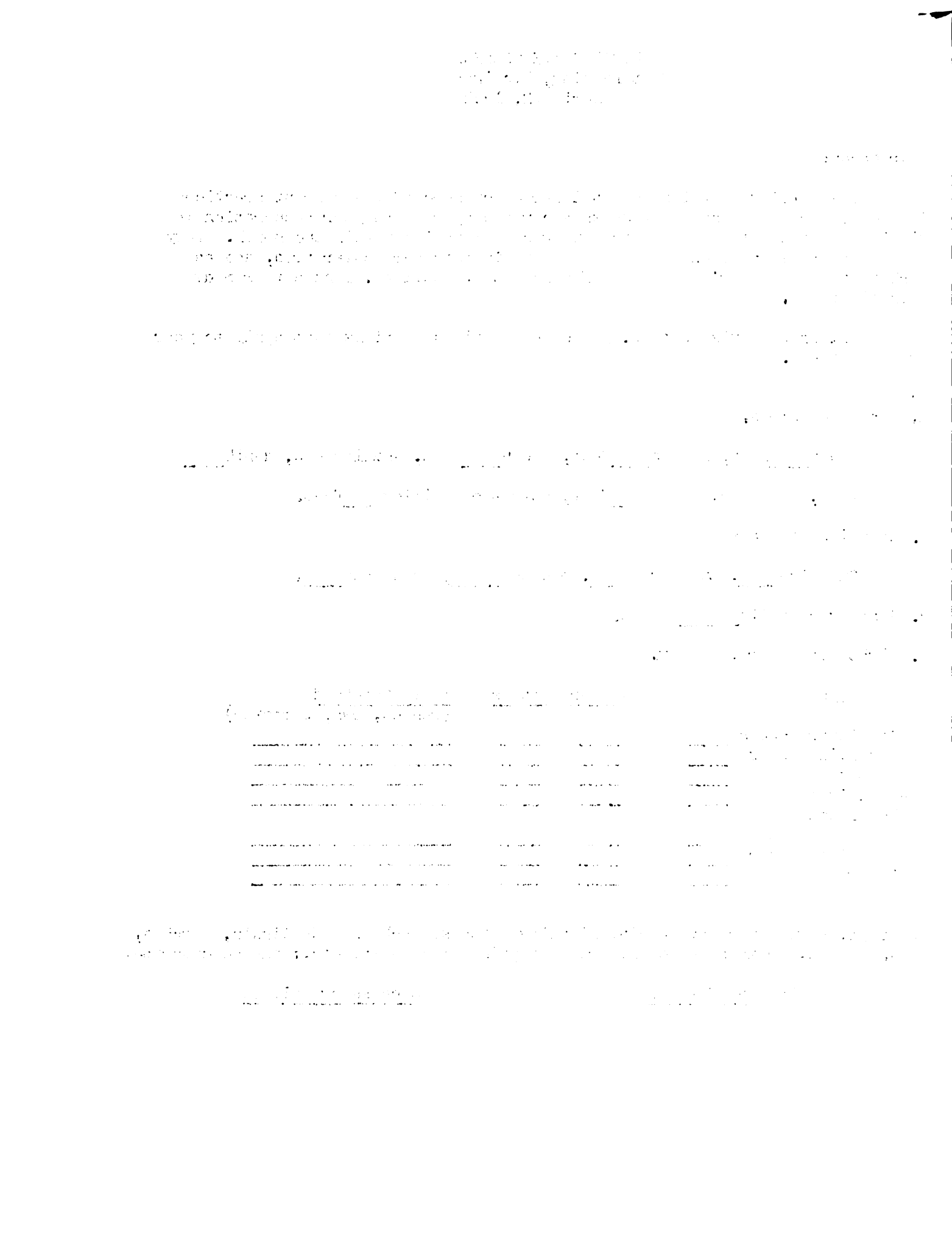
3. Seating capacity_____people.

4. Lights used for the show.

Type		Number	Watts	Where Obtained (rented, own, borrowed)
Stationary spots	____	____	____	_____
Revolving spots	____	____	____	_____
Floods	____	____	____	_____
Blacklight	____	____	____	_____
Underwater				
permanent	____	____	____	_____
improvised	____	____	____	_____
Other	____	____	____	_____

5. If you have tried any special lighting effects, such as body lights, torches, sparklers, luminescent or fluorescent paint or material etc.; please describe.

Special Effects	Success or Failure



6. Please check which lighting system you use for your shows.

Individual operators_____
Master control board_____
Combination _____
Other _____

7. If you use makeup other than the usual, please list cosmetics you have tried.

Makeup	Where Purchased	How Removed	Effectiveness

8. Please list companies where you purchase your suits.

9. Please list materials and other costume accessories you have used in water.

Accessory	Effectiveness

10. Please list kinds of headdresses you have used other than plain caps.

Headdress	Effectiveness

11. Please list kinds of accompaniment other than records, you have used.

Accompaniment	Where Obtained	Cost	Effectiveness

12. Do you cut records? Yes____. No____.

13. Do you record your show on tape (or wire)? Yes____. No____.

14. Do you use underwater speakers? Yes____. No____.

15. Do you amplify your sound? Yes____. No____. If so, how?

16. Do you recommend any particular composers, arrangers, or records?

Record	Arranger	Mood

17. Who sets up and operates your sound and lighting equipment?

18. Please list the continuity you have used to tie your show numbers together for the past four years.
    1.
    2.
    3.
    4.

19. What is your show used for?
    Money_____
    Culmination of courses and activities_____
    Stimulation to increase size of enrollment in swimming classes and club_____
    Other_____

20. We would like to know any theories or opinions you have regarding lighting, accompaniment, continuity, costuming, or makeup.

21. We would also be interested in any pertinent information or comments you would like to add. The opposite side of this sheet may be used.

If you are interested in obtaining the results of this study, please check here. _____

Signed _____

Club name _____

School _____

City and state _____

APPENDIX B

A LIST OF DEALERS AND MANUFACTURERS

Lighting

A. Underwater Lights

Crouse-Hinds Electrical Company, Syracuse, New York

Everson Manufacturing Company, 214 West Huron Street, Chicago, Illinois

General Electric Company, Nela Park, Cleveland, Ohio

Paddock Engineering Company of California, Seventh Avenue and Bayshore Boulevard, San Mateo, California

Russell and Stoll Company, Inc., 125 Barclay Street, New York, New York

Swimming Pool Supply and Engineering Company, 2018 South Robertson Boulevard, Los Angeles 34, California

Westinghouse Electric and Manufacturing Company, Edgewater Park, Cleveland, Ohio

B. Black Light

American Luminous Products Company, 6420 Marbrisa Avenue, Huntington Park, California

Black Light Products, 67 East Lake Street, Chicago 1, Illinois

Southern Importers and Exporters, 200 Farmiu Building, Houston 2, Texas

Stroblite Company, 35 West 52nd Street, New York, New York

Switzer Brothers, Inc., 1220 Huron Road, Cleveland 15, Ohio

C. Spotlights, Floods, and Lighting Equipment

American Transformer Company, Newark, New Jersey

Century Lighting Equipment, Inc., New York, New York

C. F. Holzmueller, San Francisco, California

Display Stage Lighting Company, New York, New York

General Electric Company, Schenectady, New York

Kliegl Brothers, New York, New York

Major Equipment Company, 4603 West Fullerton, Chicago, Illinois

Westinghouse Electric Company, Edgewater Park, Cleveland

Make-up

American Luminous Products Company, 6420 Marbrisa Avenue, Huntington Park, California

Black Light Products, 67 East Lake Street, Chicago 1, Illinois

Max Factor's Make-up Studios, Highland Avenue at Hollywood, Los Angeles, California

Miner's Inc., 12 East Twelfth Street, New York, New York

The M. Stein Cosmetic Company, 51 Madison Avenue, New York, New York

Stroblite Company, 35 West 52nd Street, New York, New York

Switzer Brothers, Inc., 1220 Huron Road, Cleveland 15, Ohio

Vogel Luminescence Corporation, 260 Napoleon Street, San Francisco, California

Professor J. Warnessons Make-up, 62 West Washington Street, Chicago, Illinois

Costumes

A. Bathing Suits

Aldrich and Aldrich, Inc., 1859 Milwaukee Avenue, Chicago, Illinois

Caltex of California, 2126 Beverly Boulevard, Los Angeles 4, California

Catalina, Inc., 443 South San Pedro Street, Los Angeles 13, California

Cole of California, Inc., Pacific Boulevard and Fruitland Road, Los Angeles 11, California

Elon of California, 818 South Broadway, Low Angeles, California

Gantner and Mattern of California, 1453 Mission Street, San Francisco, California

Jantzen Center, Portland 14, Oregon; Don Smith, 964 Merchandise Mart, Chicago, Illinois

Kaynell Company, 246 Fifth Avenue, New York 1, New York

Adolph Kiefer and Company, 2045 Railroad Avenue, Glenview, Illinois

Mabs, Inc., of Hollywood, Mabs Building, Los Angeles 15, California

Ocean Pool Supply Company, 1140 Broadway, New York 1, New York

J. C. Penny and Company

Rose Marie Reid, 50200 West Century Street, Los Angeles, California

Sea Nymph Swim Suits, Allentown, Pennsylvania

B. Swimming Caps

Jantzen Center, Portland 14, Oregon

Kaynell Company, 246 Fifth Avenue, New York 1, New York

Adolph Kiefer and Company, 2045 Railroad Avenue, Glenview, Illinois

Ocean Pool Supply Company, 1140 Broadway, New York 1, New York

The Seamless Rubber Company, Athletic Goods Division, New Haven 3, Connecticut

U. S. Howland Caps, U. S. Rubber Company, Providence, Rhode Island

C. Costume Materials and Accessories

Baum's, Inc., 106-114 South Eleventh Street, Philadelphia 7, Pennsylvania

Dazian's, Inc., 125 North Wabash Street, Chicago, Illinois

Hy-Sil Manufacturing Company, Revere, Massachusetts

Lester Ltd., 14 West Lake Street, Chicago 1, Illinois

Maharam's Fabric Corporation, 115 South Wabash Street, Chicago, Illinois

Sound Equipment

Masque Sound and Recording Corporation, 1790 Broadway, New York, New York

Newcomb Audio Products Company, 6824 Lexington Avenue, Hollywood 38, California

R C A Manufacturing Company, Camden, New Jersey

Rek-O-Kut Company, Inc., 38-01 Queens Boulevard, Long Island, New York

Speedy-Q-Records, 1344 Flower Street, Los Angeles, California

Standard Radio Company, 180 North Michigan Boulevard, Chicago, Illinois

Turner-Brooks, Inc., Toledo, Ohio (Fiberglas acoustical tile)

Underwater Speaker Company, 1111 19th Street, Northwest, Washington, D. C.

University Loudspeakers, Inc., 80 South Kensico Avenue, White Plains, New York

Thos. J. Valentino, 1600 Broadway, New York, New York

APPENDIX C

SWIMMING CLUBS AND ADVISORS IN THE MIDWESTERN COLLEGES

Michigan

School	Club	Advisor
Central Michigan College Mount Pleasant	Aquaballerinas	Louise Williams
Michigan State College East Lansing	Green Splash	Dorothy Kerth
Michigan State Normal Ypsilanti	Catalina	Betty J. Wilhelm
University of Michigan Ann Arbor	Michifish	Fritzie E. Gareis
Western Michigan College Kalamazoo	Sprites	Margaret S. Large

Illinois

Augustana College Rock Island	Terrapins	Jane Brissman
Bradley University Peoria	Whitecaps	Ruth Hull
Knox College Galesburg	Puddles	Evelyn Bielefeldt
MacMurray College Jacksonville	Macquatic	Carrie E. Spencer
Monmouth College Monmouth	Dolphin	
Monticello College Godfrey	Marlin	Ruth Lindsey

Mundelein College Chicago	Marlin	
North Central College Naperville		Marjorie Walsh
Northwestern University Evanston	Dolphin	Betty Young
Principia College Elsah		Jean Leiser
Rockford College Rockford		Betsy Bell
University of Illinois Urbana	Terrapin	Doris Bullock
Western Illinois State College Macomb		J. Sebree

Ohio

Baldwin-Wallace College Berea	Aqualene	Myrta Stover
Bowling Green State University Bowling Green	Swan	Iris E. Andrews
Central State College Wilberforce	Swan	Lillian Collins
Kent State University Kent	Sharks	Deane Ritter
Miami University Oxford	Marlin	Grace B. Daviess
Oberlin College Oberlin	Synchronized Swimming Club	Betty M. Wagner
Ohio State University Columbus	Swan	Betsy Bousfield
Ohio University Athens	Dolphin	Kay Manuel

Ohio Wesleyan University Delaware	Dolphin	Harriet Stewart
University of Cincinnati Cincinnati	Penguin	Mary Wolverton
Wittenberg College Springfield		Ruth Helsel

Minnesota

Carleton College Northfield	Dolphin	E. Hamen
Gustavus Adolphus College St. Peter	Aquatic League	Hildegard E. Hein
Hamline University St. Paul	Aquatic League	Lora Rossel
Mankato Teachers College Mankato	Dolphin	Margaret C. Buck
St. Cloud Teachers College St. Cloud		
St. Olaf College Northfield	Dolphin	Mabel J. Shirley

Indiana

DePauw University Greencastle	Naiad	Mary L. Miller
Indiana State Teachers College Terre Haute	Dolphin	Eleanor Forsythe
Purdue University Lafayette	Triton	Elnora Martinelli
University of Indiana Bloomington	Oceanides	Janet E. McAcley

Iowa

Iowa State Teachers College Cedar Falls	Marlin	Barbara Yager
Iowa State College Ames	Naiads	June Balter

Wisconsin

La Crosse College La Crosse	Catalina	Betty Band
University of Wisconsin Madison	Dolphin	Mary Hooton

APPENDIX D

ARRANGERS, COMPOSERS, AND RECORD TITLES

I Most frequently used arrangers for watershows:

Anderson, Leroy
Anthony, Ray
Baxter, Les
Boston Pops
Brown, Les
Faith, Percy
Gould, Morton
Kostelantez, Andre
London Symphony Orchestra
Mantovani
Miller, Glenn
Newman, Alfred
Paul, Les
Rene, Henri
Rose, David
Weston, Paul
Winterhalter, Hugo

II Other popular arrangers that have been used:

Aquaviva
Atkins, Chet
Boston Caledonian Pipe Band
Barnum and Bailey Band
Barnet, Charlie
Berry, Leon
Bloch, Ray
Brooks, Randy
Camarata
Castellucci, Louis
Cole, Buddy
Cook, Lawrence
DeVol, Frank
Dorsey, Tommy
Duchin, Eddie
Flanagan, Ralph
Garber, Jan
Gleason, Jackie
Goodman, Al
Goodman, Benny
Gray, Jerry
Hayman, Richard
Hayton, Lennie
Herman, Woody
Hunt, Pee Wee
Jones, Spike
Kenton, Stan
King Cole Trio
Krupa, Gene
Melachrino Strings
Miller, Mitch
Morrow, Macklin
North, Alex
Raige, Raymond
Radio City Music Hall
Sauter-Finegan

Shearing, George
Thompson, Virgin
Thornhill, Claude
Torch, Sidney
Venuti, Maxwell, Briggs
Williams, Tex
Wilson, Teddy
Young, Victor
Yaconbian, Hrach

III Music from musicals and films:

American in Paris
Can Can
Captian from Castile
Carousel
For Whom the Bells Toll
Greatest Show on Earth
Red House
Ruby Gentry
Salome
Spellbound

IV Classical composers used:

Copeland, Aaron
DeBussy, Claude
Gershwin, George
Gould, Morton
Drofe, Gerde
Khachaturian, Aram
Rachmaninoff, Sergei
Ravel, Maurice
Rimsky-Korsakov
Rozsa, Miklos
Saint-Saens, Camille
Strauss, Richard
Tchaikovsky, Peter

* A good list of modern music may be found in "Materials for Teaching Dance" published by the American Association for Health, Physical Education, and Recreation, for the National Section on Dance.

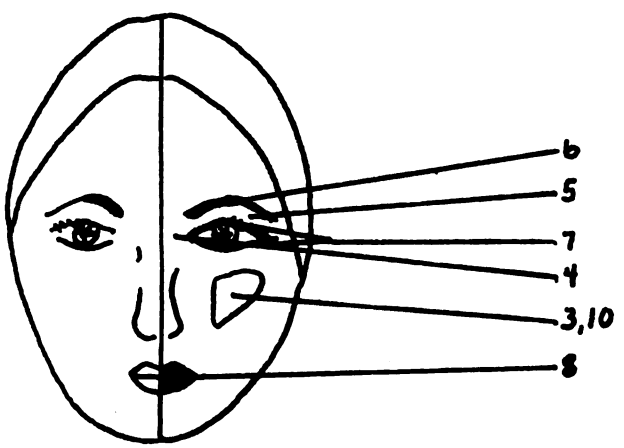
APPENDIX E

SAMPLE MAKE-UP AND COSTUME ILLUSTRATIONS

I Straight or basic stage make-up for a person with fair skin and light brown hair.

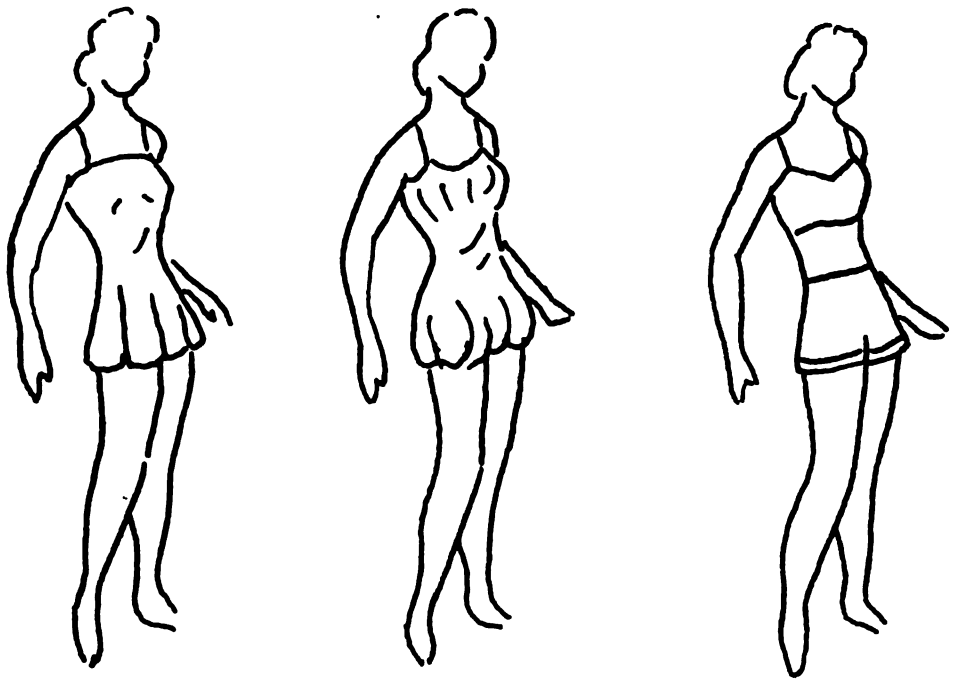
Apply make-up in the following order:

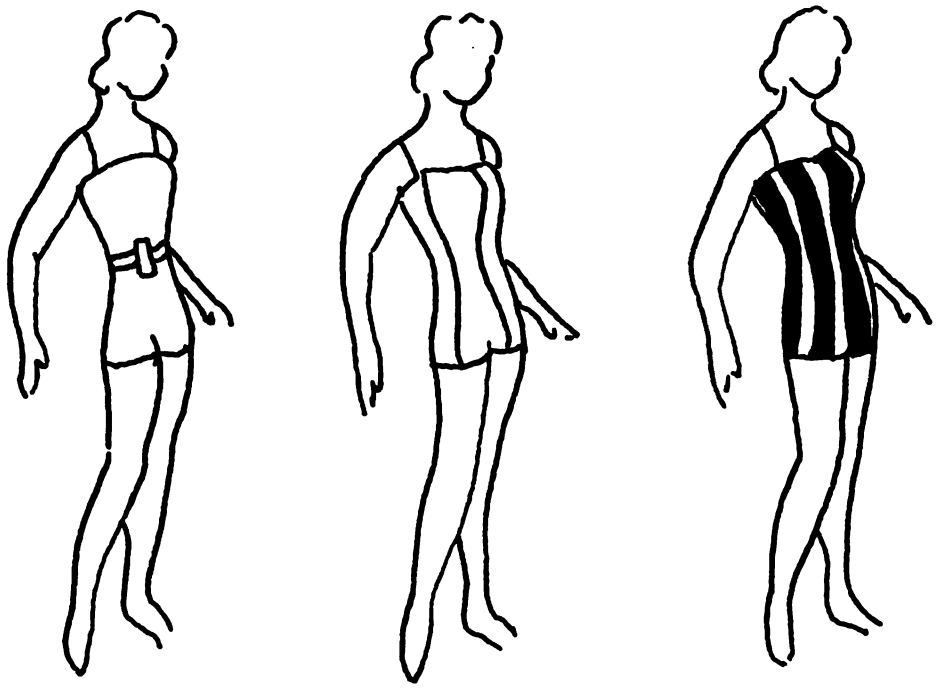
1. Cold cream
2. Foundation grease paint, number two and one-half
3. Under rouge, medium red
4. Lake liner, crimson
5. Blue liner (eye shadow), number two
6. Eyebrow pencil
7. Brown liner
8. Lip rouge, carmine number two
9. Powder, natural
10. Dry rouge, medium red



Strenkovsky, Serge, The Art of Make-up, New York: E. P. Dutton and Company, 1937. Pp. 147-52.

II Sample basic costumes for the slender swimmer.

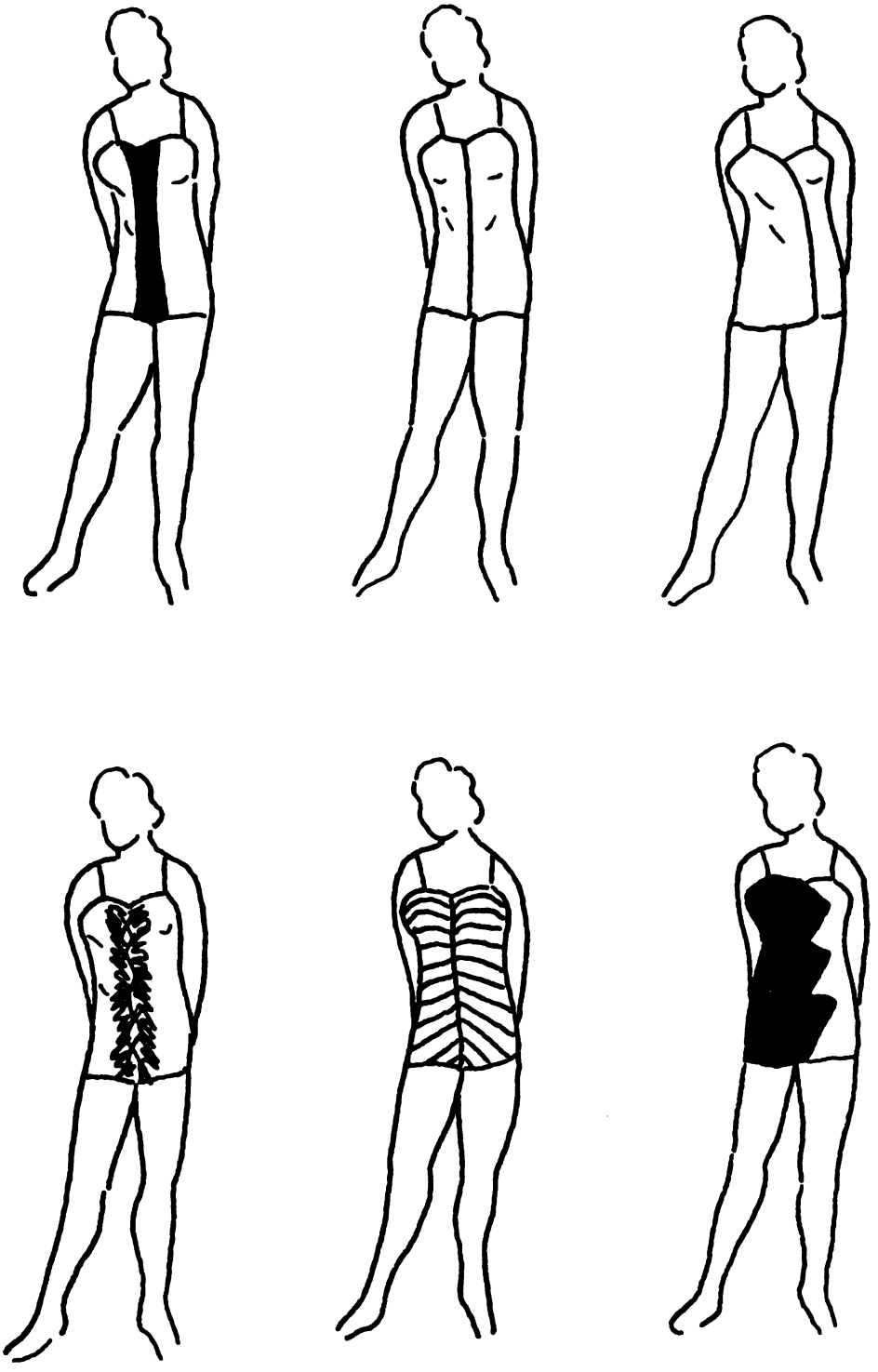




Ryan, Mildred Graves, and Velma Phillips, Clothes for You, New York: D. Appleton-Century Company, Inc., 1947, Pp. 80-84, 119-29.

Morton, Grace Margaret, The Arts of Costume and Personal Appearance, Sixth edition, New York: John Wiley and Sons, Ltd., 1946, Pp. 247-51.

III Sample basic costumes for the heavy swimmer.



Loc. cit.

APPENDIX F

TYPES OF CONTINUITY USED FOR WATERSHOWS

Visual

1. Sectional murals on the wall, spotlighted before each number.
2. Artist paints a preview of each number.
3. Pantomime with music in the background as a preview of each number.
4. Picture announcing each number by posed groups in a frame.
5. Short solo numbers in the water in between the other numbers.
6. Dances of all kinds that fit in with the theme and help tie the numbers together.

Audio

7. Narration of a story or tale told in between each number, by one or two people.
8. Narration of a story in between numbers, told by a speaking choir.
9. Pantomime with music in the background as a preview.
10. Circus barker for a circus show.
11. Grandmother tells story to children.
12. Narration done by a singing choir.
13. A quotation from Shakespeare to preview the numbers.
14. A short poem pertinent to the next number recited.

APPENDIX G

PURPOSE OF WATERSHOWS

Purpose		Number of Schools
1.	Money	17
2.	Stimulation to increase size of enrollment in swim classes and club	12
3.	Culmination of courses and activities	10
4.	Culmination of club activities	9
5.	Stimulation for club	6
6.	To develop responsibility and learn how to organize	3
7.	Increase proficiency in swimming	3
8.	Entertainment	2
9.	To learn how to work together	2
10.	Pleasure for swimmers	2
11.	Stimulate interest in synchronized swimming as an art form	2
12.	Incentive to become better swimmers	2
13.	To provide a goal	1
14.	Culmination of synchronized swimming courses	1
15.	Educational experience	1

APPENDIX H

Circus

Carnival Capers
Circus Frolics
The Greatest Splash on Earth
Water Carousel

Weather

Weather or Not
Weather Vanities

Abstract

Aquastry in Rhythm
Hues in Harmony
Moods in Motion
Rhythms in Blue
Rhythm in Ripples
Splashes from a Paint Box
Swymphony

Newspaper

Dolphin Daily
Swim out the News
Terrapin Times

Collegiate - Sports

Big Ten on Parade
Collegiate Capers
Olympic Games
School Daze
Varsity Drag

Time; past, present, future

As Time Goes by
Out of this World
Portraits of the Past
Sands of Time

Seasons

Seasonal Fantasy
The Year Around

Theater, cinema

Cinema Splash
Dizney' Delirum
Scheherazade
Showboat
South Pacific

Stories

Alice in Waterland
Child's Fantasy
Magic Land of Make-Believe
Mother Goose
Snow White
Shadow of Atlantis
The Fantastic Toyshop
Toymaker's Dream
Twas the Night Before Christmas
Water Legend of Warund

Holidays

Easter Parade
Esquire Escapades
Happy Holidays
Holiday Swim
Swimmer's Holiday

Aquatic

Aquaversaries
Concerto in Sea
Fathom Fantasy

Geographic

Arabian Nights
Far Away Places
Fiesta del Aqua
Hawaiian Hukilau
Join the Navy and See the World
Old Man River
Southern Rhythm
Swimalogue
This is my Country

Anniversary, family

Anniversary Extra
Family Album

Night life, cities

Blues in the Night
Aqua Cabaret
Magic Metropolis
Manhattan Contrasts
Rathskellar Blues

Perfume

Essence of 1950
Scentamental Journey

Dreams

Dreams in Aquatime
Dream Tides
Reverie in Ripples

Variety

Aqua Magic
Aquacade
Aquamania
New Fins of '53
Platter Splash
Spectra-Splash
Water Wonderland
Wonderfully Wet

Miscellaneous

Confectionately Yours
Footwear Follies
Girls I Remember
Penguin Pot Luck

APPENDIX I

COMPARISON OF POOL SIZES AND SEATING CAPACITIES OF FORTY-TWO MIDWESTERN COLLEGES

Dimensions Width-Length	Number of Schools	Depth S - D	Number of Schools	Ceiling Height	Number of Schools	Location of Seats	Number of Schools	Seating Capacity	Number of Schools
20 - 42	1	3-7	1	7	1	1 Side	20	35	1
		3-7½	1					50	2
20 - 60	11	3-8	5	12	8	2 Sides	5	75	2
		3-8½	2					100	5
20 - 65	3	3-9	1	15	4	1 End	4	110	1
		3-10	3					125	1
25 - 60	2	3-11	1	20	4	2 Ends	0	150	2
		3-12	1					180	1
25 - 75	3	3½-8	2	25	2	1 Side		200	7
		3½-8½	2			1 End	3	250	5
30 - 60	3	3½-9	2	30	6			265	1
		3½-9½	1			1 Side		275	1
30 - 75	6	3½-10	2	35	3	2 Ends	1	300	2
		3½-13	1					325	1
35 - 60	1	4-7	1	40	7	2 Sides		400	1
		4-7½	1			1 End	9	425	1
35 - 65	1	4-8	1	50	1			500	1
		4-8½	1			2 Sides		550	1
35 - 75	2	4-10	6			2 Ends	0	600	1
		4-12	1					700	2
35 - 90	1	4-13	1					750	1
		4½-9	1					1,200	1
40 - 60	2	4½-10	1					1,600	1
		7-12	1						
40 - 75	5	7-15	1						
45 - 75	2								

Packet has: 1 Abstract