

September 5, 1942.

Mr. Carl Amiet, Sales Manager,
Standard Pool Cleaner Company,
1320 Greenfield Ave., S. W.,
Canton, Ohio.

Dear Mr. Amiet:

After considerable lapsed time we have been able to overhaul our pump and it seems to be in fairly good working order.

We are now coming to you for additional information concerning the pool cleaner. We want to impress upon you the fact that our pool arrangement is such that we have to use a portable outfit which must be disassembled each time the pool is cleaned.

At the present on the pump for cleaning pool we are using $1\frac{1}{4}$ inch iron pipe threads both on the suction and discharge. The hose on both, that is suction and discharge, have $1\frac{1}{2}$ inch outside diameter pipe slipped into $1\frac{1}{2}$ inch outside diameter, and then connected to pump with $1\frac{1}{4}$ inch ground joint unions. However, our pump openings are bushed so that we can attain the two inch connections as you suggest. On the discharge after leaving pump hose we have a $1\frac{1}{2}$ inch iron pipe which carries to the sewer. Should this be enlarged to 2 inch diameter?

Do you have a connection which is 2 inch I P T male on one end and the other end to take bronze smooth taper inlet which is attached to hose? In other words, we are interested in a connection that will connect hose from cleaner to pump and also pump to discharge line. Pump connection is 2 inch I P T female and your hose is listed as $1\frac{1}{2}$ inch inside diameter hose; quick change on both connections.

We appreciate your letter of July 30 describing your #700 Tucc Cleaner, and have requested a priority rating so that we may place our order, but in the meantime we would like to have the above information.

Very sincerely yours,

Director of Physical Education,
Varsity Basketball Coach.

FCA:AH

4/1/42

COPIES OF THIS FORM ARE BEING DISTRIBUTED BY THE BUREAU OF INDUSTRY OPERATIONS TO THE DIRECTORS OF THE STATES AND TERRITORIES AND TO THE DISTRICT ATTORNEYS OF THE STATES AND TERRITORIES FOR THE PURPOSE OF ENABLING THEM TO OBTAIN COPIES OF THIS FORM FOR THE USE OF THEIR RESPECTIVE STATES AND TERRITORIES.

Information Necessary for Consideration of APPLICATION FOR PREFERENCE RATING

To: DIRECTOR OF INDUSTRY OPERATIONS, Washington, D. C.

List all numbers and cover each point of information completely. If no answer is applicable, write NONE alongside of number.
READ INSTRUCTION SHEET CAREFULLY BEFORE PREPARING APPLICATION.

| Number | IDENTIFY EACH STATEMENT BY NUMBER WITH CORRESPONDING NUMBER ON PD-1A—INSTRUCTION SHEET |
|--------|---|
| 1. | Description of TUEC No. 700 Hand Model Swimming Pool Cleaner: The handles are furnished in sections of 7½ feet each made of 1½ inch diameter brass tubing with bronze connections. These handles are attached to the cleaning tool and also connected together by slip connections with bronze clamps which eliminates the possibility of their coming apart while the cleaner is being used. TUEC 1½ inch inside diameter, specially constructed, rubber covered, rubber lined, reinforced hose is furnished. The inlet for connecting the cleaner to the piping is made of bronze with smooth taper to fit tapered terminal of the hose. A bronze plug is furnished for closing the inlet when not in use. The copper floats furnished for suspending the hose on the top of the water are 6½ inches in diameter and are complete with clamp for attaching to the hose. |
| 2. | Used for cleaning swimming pool. Pool to be used every school day from 8:30 a.m. to 5:30 p.m. for classes in physical conditioning (men and women students). Most men students at the University are registered for Selective Service or members of the various enlisted reserve services of the armed forces of the United States. The Navy Mechanics stationed at the University of Kansas use the swimming pool facilities. |
| 3. | None. |
| 4a. | None. |
| b. | " |
| c. | " |
| 5. | University of Kansas |
| a. | one (only) P.R. # 26346 |
| 6. | None. Can be supplied with priority rating. |

RECEIVED BY THE BUREAU OF INDUSTRY OPERATIONS

DATE RECEIVED: _____

BY: _____

NAME OF APPLICANT: _____

ADDRESS: _____

CITY: _____ STATE: _____

Applicant Must Manually Sign Duplicate Copy of Application at Bottom of Page 2
APPLICANT SHOULD RETAIN THIS COPY

WAR PRODUCTION BOARD
PREFERENCE RATING CERTIFICATE

WPB Serial No. _____

TO BE FILLED OUT BY APPLICANT

MAIN OFFICE ADDRESS

Department of Physical Education

(Legal name of applicant) (Type or Print Clearly)

University of Kansas

(Street)

Lawrence

(City)

Kansas

(State)

RECEIVING PLANT ADDRESS

University of Kansas

(Street)

Lawrence

(City)

Kansas

(State)

Applicant's
Ref. No. _____

Date of Application **Sept. 5, 1942** Type of Business

University

ITEMS COVERED BY THIS CERTIFICATE—List for each item:

| * Required Delivery Date | | | Quantity and Unit of Each Shipment | Value Each Shipment (Actual or Estimated) | FULL DESCRIPTION OF SINGLE CLASS OF MATERIAL (OR CAPITAL EQUIPMENT) REQUIRED BY APPLICANT |
|--------------------------|-------|------|------------------------------------|---|---|
| Day | Mo. | Year | | | |
| 19 | Sept. | '42 | 1 | \$170.00 | #700 Deluxe model TUEC Vacuum Cleaner for Swimming Pool, consisting of the cleaning tool, one 7½ foot brass handle, one 7 foot wood handle, 50 feet of 1½ inch rubber covered and rubber lined hose with bronze terminals, 7 floats and one inlet |

* Delivery date(s) specified in purchase order(s) must not be earlier than above Required Delivery Date(s).

PRIORITIES REGULATION No. 3 GOVERNS THE ISSUANCE OF THIS CERTIFICATE AND THE PREFERENCE RATING ASSIGNED. ALL OF ITS TERMS MUST BE OBSERVED. THE FOLLOWING INSTRUCTIONS ARE PROVIDED TO ASSIST IN EXTENSION OF PREFERENCE RATINGS:

- The Preference Rating assigned by this Certificate may be extended only to:
 - Deliveries of material which will itself be ultimately delivered pursuant to the original preference rating, or which will be physically incorporated into material to be so delivered, or which will be used within the limitations of paragraph (e) of Priorities Regulation No. 3, to restore inventory to a practicable working minimum.
 - Material which is neither greater in quantity nor to be delivered on dates earlier than required to make on schedule a rated delivery or, within the limitations of Priorities Regulation No. 3, to restore inventory to a practicable working minimum.
- The person to whom this Certificate is issued shall retain it, and he and each related Supplier and Subsupplier may extend the Preference Rating assigned herein to his purchase order(s) by executing and transmitting to his Supplier(s) by endorsement on purchase order or other equivalent document, the following form of Certification, which shall constitute a representation to the Director of Industry Operations.

(The Following Form of Certification Must Be Placed on Each Purchase Order in Order to Extend This Rating)

| | |
|--|---------------------------------------|
| "Preference Rating _____ is hereby applied pursuant to Certificate PD-1A, Serial No. (s) _____ in accordance with Priorities Regulation No. 3, with which I certify I have complied. | |
| (Address) | (Applicant, supplier, or subsupplier) |
| (Date) | (Signature and title of official) |

(TO BE FILLED OUT BY THE DIRECTOR OF INDUSTRY OPERATIONS)

THE FOLLOWING PREFERENCE RATING IS HEREBY ASSIGNED TO THE ITEMS IN THE QUANTITIES COVERED BY THIS CERTIFICATE:

To: DIRECTOR OF INDUSTRY OPERATIONS, Washington, D. C.

APPLICATION FOR PREFERENCE RATING

Information necessary for consideration of

July 30, 1942.

Mr. Raymond Nichols,
Executive Secretary,
Chancellor's Office.

Dear Mr. Nichols:

At a conference with Mr. Eberhart, the University plumber, he gave me the following report concerning the swimming pool:

Filter: Steel shell, approximately 4 ft. in diameter and about 6 ft. high; it is impossible to turn the wheel which agitates the gravel in the filter - and as long as the gravel cannot be agitated the filter is not doing the job. The chlorinator is now the only means of purifying the water. The steel shell is rusted and about to fall apart.

Leak in pool: Very possibly this is due to the glazed surface of the tiles being broken, and the pressure forces the water through the tile. There may also be some escape of water through the side walls. The drain pipe from the pool to the sewer is exposed, and has been checked time and time again - but this pipe is intact and there is no leak here. However, water is still escaping from the pool.

Circulating line - on the pressure side of the pump will soon need to be replaced. (Buildings and Grounds)

Pool cleaner will need to be replaced.

The pool cleaner is an expensive item, and this is one of the things asked for in the special pool maintenance fund. This old pool cleaner was made by Mr. Martin from some old, discarded stuff used by the Buildings and Grounds. Mr. Eberhart says this pump will not work at all and it accounts at times for the unsanitary condition of the pool. This is one of the "musts".

You will also notice what Mr. Eberhart has to say regarding the filter. He said he looks for this to go to pieces at any time. This filter is a large steel tub-like vat, and it is expensive indeed. It should be replaced now when our budget allows.

I am writing Mr. Bayles regarding the circulating line on the pressure side of the pump, and asking him to take such measures as he deems necessary.

Regarding the leak in the pool, it is Mr. Eberhart's opinion that the glazed surface of the tile being broken causes us to lose water. We have asked Mr. Dugan, the custodian, to count these tiles that are broken and he estimates there are at least a hundred of them broken. If this is the difficulty causing the leak the only remedy would be to replace these tiles with broken glaze.

We have made a check on the loss of water from the pool and we found that the water has gone down 20 inches in four days. The report is as follows:

From Friday, July 24, to Saturday, July 25,
the water receded 8 inches
From Saturday, July 25, to Monday, July 27,
the water receded 12 inches
From Monday, July 27, to Tuesday, July 28,
the water receded 4 inches

The water is continuing to leak out at the rate of four to five inches every 24 hours.

I would appreciate it if you would discuss with the Chancellor and Mr. Bayles this situation, because the University is losing much money by this loss, and we in the department are losing much chlorinated water, which is expensive. So it is a double drain on the finances.

I finally succeeded in having a representative, Mr. Harris, of Wallace & Tiernan, of Kansas City, check on the chlorinator. By this method we have saved the usual charge of \$15.00 when we have a special call by their representative to do this job. His report is as follows:

"On inspection of the chlorinator of this date (July 27) I found it to be in satisfactory operating condition with no essential parts needed. The $\frac{1}{2}$ " chlorine tubing ordered in March has been installed and eliminated the discharge trouble. This tubing should last at least three or four years.

"The control compensator is in good condition, after some cleaning this morning, and by keeping the heating light burning during the time of operation this should operate indefinitely with no trouble. The equipment should be operated using 60 lbs. full water pressure, rather than the 25 lb. pressure used previously.

"I am delivering today one box of assorted MSP gaskets for this equipment, which are good to have on hand. Mr. Eberhart, the plumber, understands the operation of the equipment very well and I have instructed him in the points that are indicators for trouble in the equipment's operation.

"Although unable to weigh the cylinder, I would estimate that it is approximately half full (75 lbs. of chlorine). In view of the fact that the pool is to be taxed to a heavier extent in the coming year, I would recommend that Form PD 190 be filled out and filed immediately with the chlorine company in order to obtain shipment by the time the gas is needed. It has been the experience in past cases that this takes between 45 and 90 days for shipment."

I believe the chlorinator is in pretty fair working order, but the filter is of no use whatsoever in its present condition, and if anything should happen to the chlorinator we would just have to close the pool for the time of the accident which might be quite some time. Therefore, I think some measure should be taken to get this filter replaced so that all of our eggs are not placed in one basket. Mr. Eberhart says that it is impossible to count on the filter for any help the way it is at present.

Robinson Gymnasium was built in 1906, so that old filter has done service for 36 years. I would like to have authority to go forward with estimates with a view of getting a new filter in the next two years, at least.

I believe that out of the \$400 for special allotment for the pool we might replace these glazed tile and save a lot of money. I am also checking with Mr. Bayles on this tile item. We are draining the pool this week end and it will be the first time that we have had the pool drained in a year so that replacements could be made.

What is your reaction?

Very cordially yours,

Director of Physical Education,
Varsity Basketball Coach.

FCA:AH

cc-C. G. Bayles

CONCERNING THE SWIMMING POOL - - - - -

Filter: Steel shell, approximately 4 ft. in diameter and about 6 ft. high; it is impossible to turn the wheel which agitates the gravel in the filter - as long as the gravel cannot be agitated the filter is not doing the job. The chlorinator is now the only means of purifying the water. The steel shell is rusted and about to fall apart.

Leak in pool: Very possibly this is due to the glazed surface of the tiles being broken, and the pressure forces the water through the tile. There may also be some escape of water through the side walls.

Number of tiles with broken glaze : _____

Water level in pool - 24 hour stages: _____

Circulating line on the pressure side of the pump will soon need to be replaced. (Bldg. & Gr.) (The drain pipe from the pool to the sewer is exposed, and has been checked time and time again - but this pipe is intact and there is no leak here. However, water is still escaping from the pool.)

Pool cleaner - will need to be replaced. Have written for prices on this.

Chlorinator - have asked representative of Wallace-Tiernan to check on condition.

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Swimming Pool --

From Friday, July 25, to Saturday, July 25,
the water receded 8 inches

From Saturday, July 25, to Monday, July 27,
the water receded12 inches

From Monday, July 27, to Tuesday, July 28,
the water receded 4 inches

The water has gone down 20 inches in four days.

Report of Mr. Harris, representative of Wallace & Tiernan
Company, of Kansas City, concerning the chlorinator - July 28, 1942.

"On inspection of the chlorinator of this date I found it to be in satisfactory operating condition with no essential parts needed. The $\frac{1}{2}$ " chlorine tubing ordered in March has been installed and eliminated the discharge trouble. This tubing should last at least three or four years.

"The control compensator is in good condition, after some cleaning this morning, and by keeping the heating light burning during the time of operation this should operate indefinitely with no trouble. The equipment should be operated using 60 lbs. full water pressure, rather than the 25 lb. pressure used previously.

"I am delivering today one box of assorted MSP gaskets for this equipment, which are good to have on hand. Mr. Eberhart, the plumber, understands the operation of the equipment very well and I have instructed him in the points that are indicators for trouble in the equipment's operation.

"Although unable to weigh the cylinder, I would estimate that it is approximately half full (75 lbs. of chlorine). In view of the fact that the pool is to be taxed to a heavier extent in the coming year, I would recommend that Form PD 190 be filed immediately with the chlorine company in order to obtain shipment by the time the gas is needed. It has been the experience in past cases that this takes between 45 and 90 days for shipment."

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MONSANTO CHEMICAL COMPANY

ST. LOUIS, MISSOURI

February 3, 1942

TO OUR CHLORINE CUSTOMERS:

In order that you may obtain your Chlorine requirements in any given month, it will be necessary for you to fill out a PD-190 form, returning the original and two copies, along with your regular purchase order, to this office by the 10th of the month preceding that in which you require delivery.

We have found from the application orders we have received so far that there has been some misinterpretation, and in order to clarify some of the most commonly misinterpreted Sections, we offer the following suggestions, using a March order as an example:

Section 3: "Stocks of Chlorine on hand last day of previous month:" (This should be your stock as of Jan. 31.)

"Quantity of Chlorine to be delivered during month:" (This is the Chlorine you expect to receive from us during February.)

Total the above and give the estimated length of time, in days, this quantity will last. If this indicates an increased amount of Chlorine above your past consumption, please explain this in Section 9 of the form.

Section 6: This should be the quantity of Chlorine you are ordering for March.

Section 7: Give the delivery date, or dates, on which you require the Chlorine requested in Section 6.

Section 8: If you have various ratings, please list each separately showing the quantity that may be given that rating. Place all A ratings under Defense Orders, and all B ratings under Civilian Orders.

You will probably not have any trouble filling out the other Sections, but if you do have any questions, please write us.

To prevent the possibility of future Forms, and correspondence regarding these Forms, from going astray, we should appreciate your giving us the name of the person to whom we should address any correspondence on this subject.

Thanks for your cooperation.

Very truly yours

July 24, 1942.

Standard Pool Cleaner Company,
1204 Shadyside Avenue S. W.,
Canton, Ohio.

Gentlemen:

Will you kindly send us your catalog and prices
on swimming pool cleaners and pumps?

We are anticipating an extra heavy load in use
of our swimming pool during the coming year, due to the
Navy mechanics being stationed at the University, and are
anxious to have our pool cleaning equipment in good con-
dition.

Our vacuum cleaner is in very bad shape and will
need to be replaced. It is possible that the motor in the
pump we now have could be used if the other parts could be
replaced. Do you have a traveling representative who
would be in this section of the country this summer? If
so, it would be well for him to look over our pool cleaning
equipment and give us an estimate on the cost of replacing
it.

Sincerely yours,

Director of Physical Education,
Varsity Basketball Coach.

FCA:AH

| | | |
|----------------------|---|-------|
| 2 Fri. 24 to Sat. 25 | } | 8" |
| Down 8 in. | | |
| 5 Sat. 25 to Mon 27 | } | 6 1/2 |
| Down 20 in. | | |
| 6 Mon 27 to Tues 28 | } | 4 |
| Down 24 in. | | |

8

CONCERNING THE SWIMMING POOL - - - - -

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Leak in pool: Very possibly this is due to the glazed surface of the tiles being broken, and the pressure forces the water through the tile. There may also be some escape of water through the side walls.

Number of tiles with broken glaze : _____

Water level in pool - 24 hour stages: _____

Circulating line on the pressure side of the pump will soon need to be replaced. (Bldg. & Gr.) (The drain pipe from the pool to the sewer is exposed, and has been checked time and time again - but this pipe is intact and there is no leak here. However, water is still escaping from the pool.)

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July 24, 1942.

Wallace & Tiernan Company,
Kansas City, Missouri.

Gentlemen:

The next time your field representative will be in or near Lawrence I wonder if you would kindly ask him to stop over and check the condition of the chlorinator in the swimming pool in Robinson Gymnasium at the University. We particularly desire him to check on the reducing valve.

The Navy mechanics are stationed at the University and our load in the pool will be exceptionally heavy. We want to avoid any possible break-down that might occur during the next year.

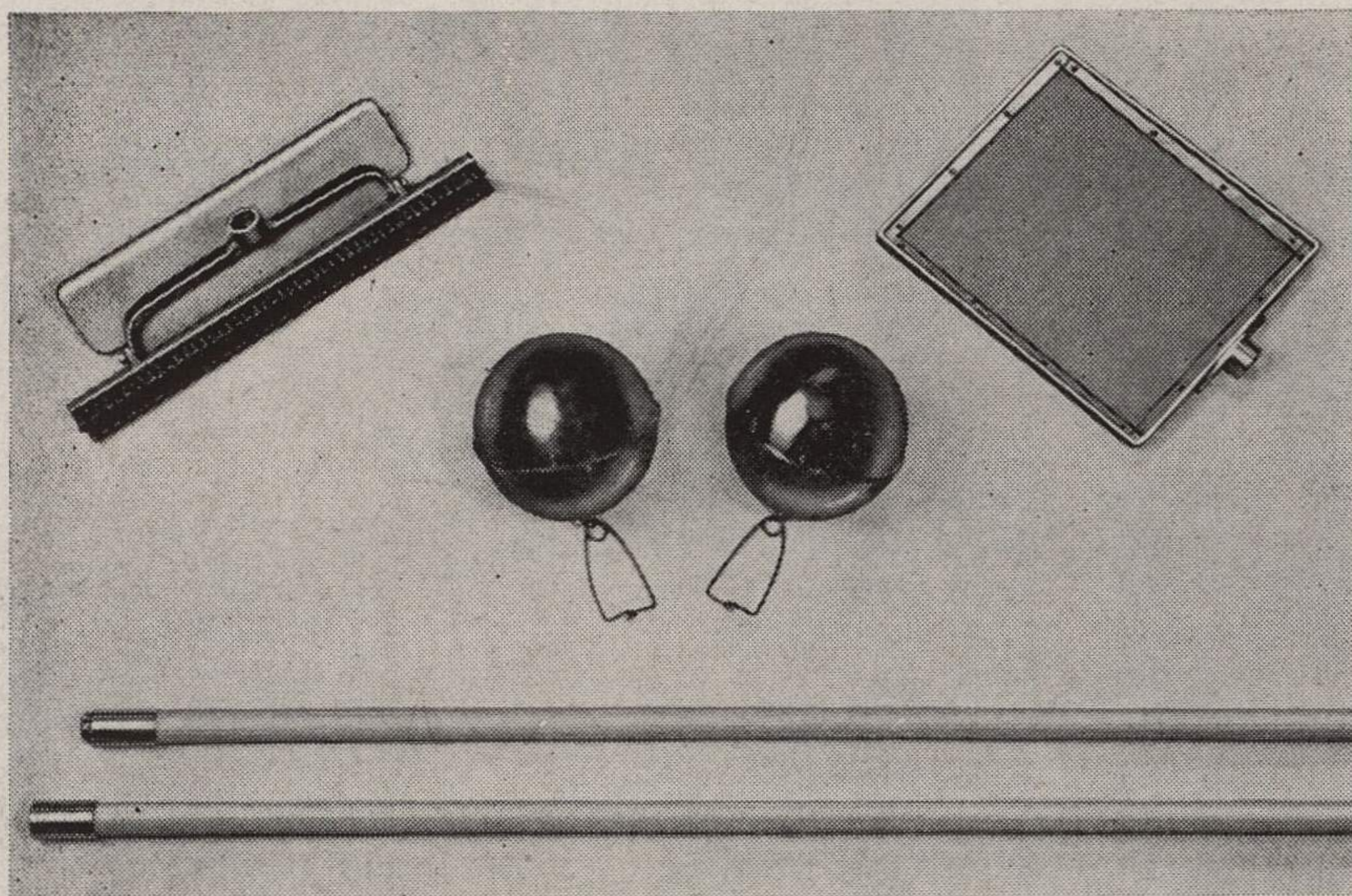
If your representative will kindly advise us ahead of time when he is coming then our people can be here to confer with him.

Sincerely yours,

FCA:AH

Director of Physical Education,
Varsity Basketball Coach.

TUEC ACCESSORIES FOR SUCTION POOL CLEANERS



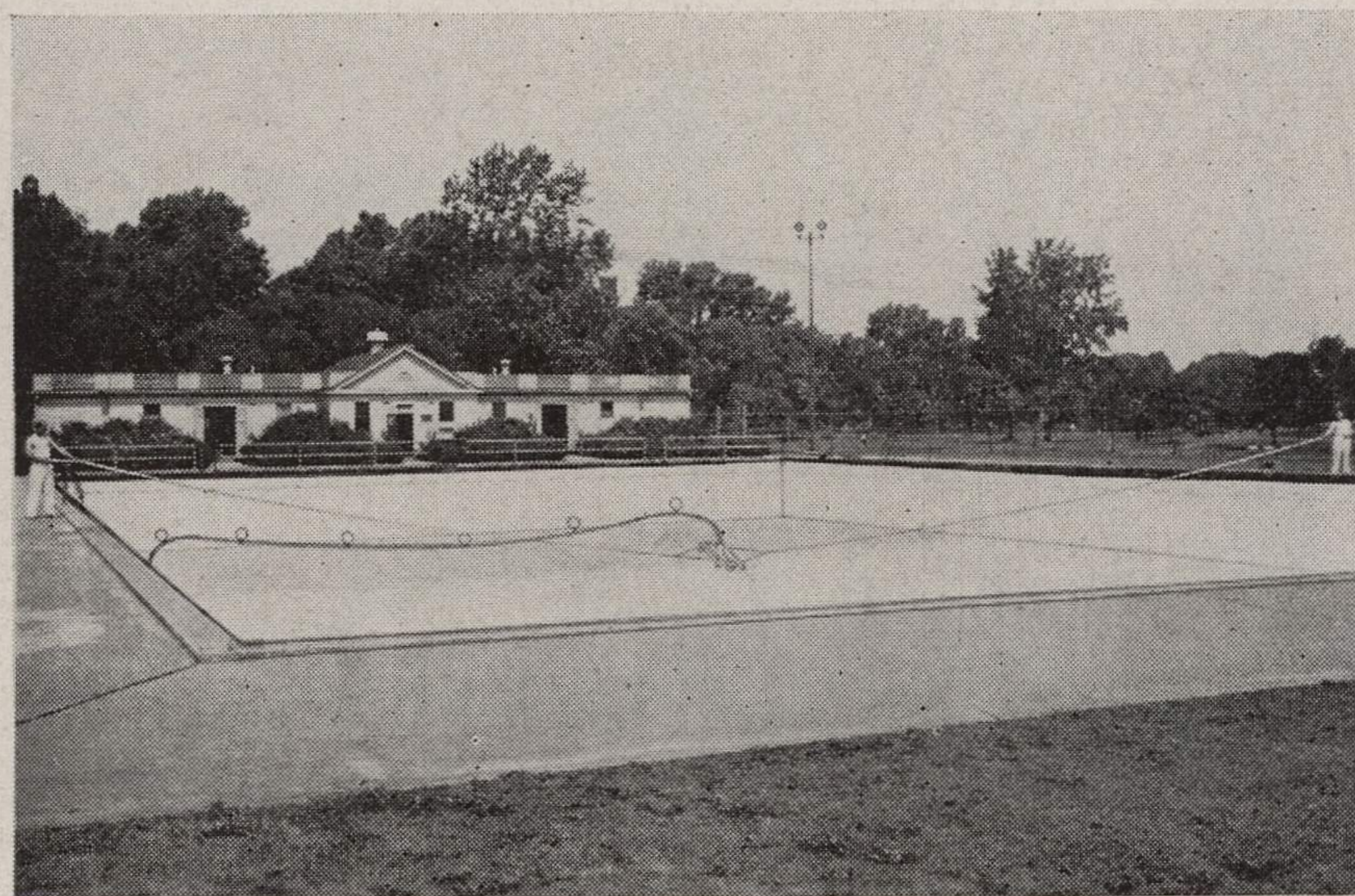
COPPER FLOATS—Keep the hose properly suspended, increase ease of operation and prevent disturbance of sediment caused by dragging the hose. Set of seven recommended for each fifty foot length of hose.

WALL BRUSH—An efficient brush for the walls of the pool. Walls should be brushed down and the pool water allowed to settle, before using the cleaner. This brush is equally adaptable for indoor and outdoor pools.

SKIMMER—Removes scum, leaves and other floating objects from the surface of the pool. Light in weight, easy to handle.

HANDLES—Two hardwood extension handles six feet each are furnished, which are interchangeable and can be used with either the wall brush or the skimmer.

TUEC TOW MODEL SUCTION CLEANER *For Swimming Pools*



PARTS LIST

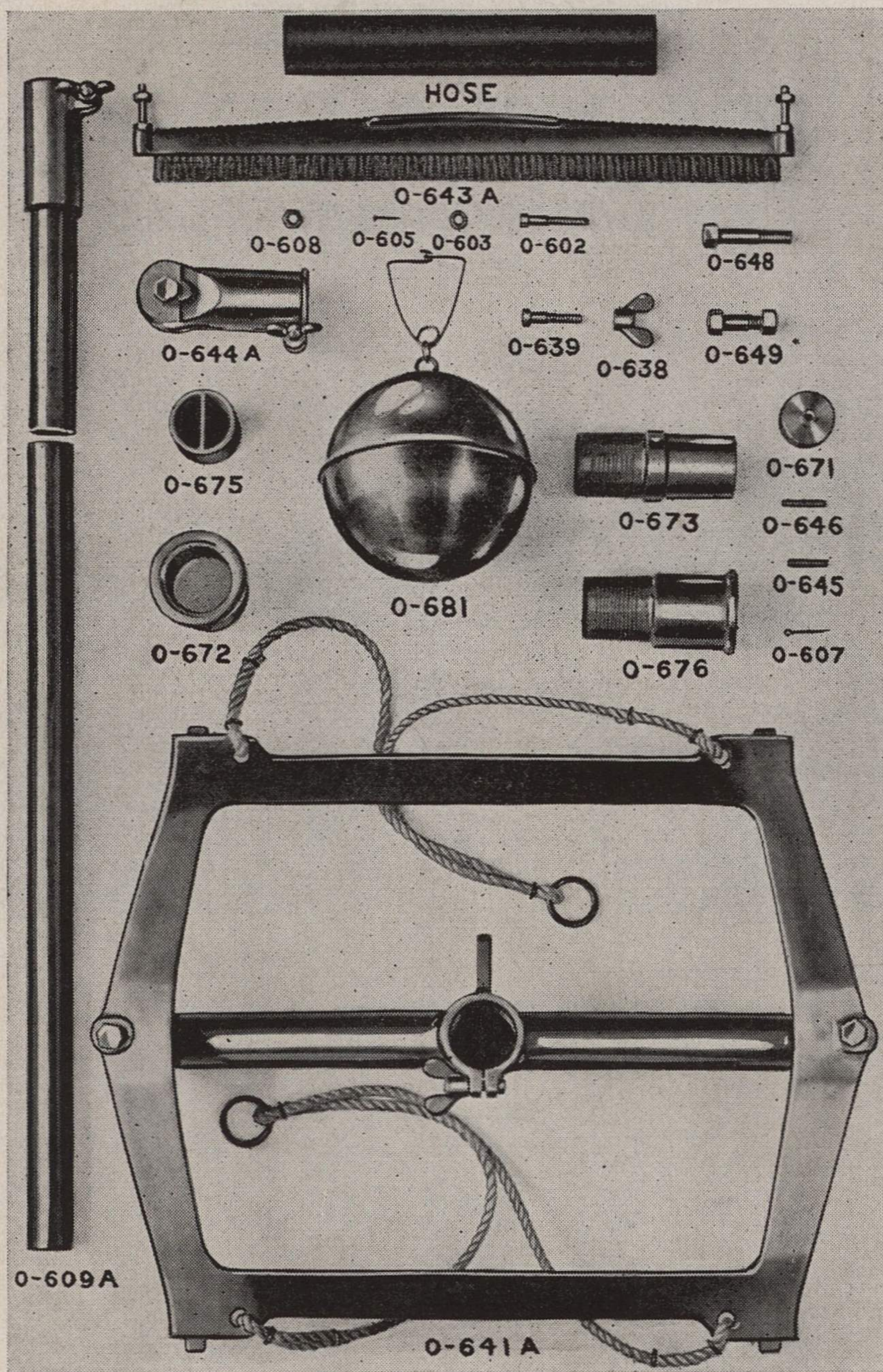
Standard Pool Cleaner Co.

1204 Shadyside Ave. S. W.

Dial 2-1111

Canton, Ohio

TOW MODEL PARTS



Tow Model TUEC Swimming Pool Cleaner
consists of the following parts:

- 1—O-641A Cleaning Tool Assembled Complete
- 1—O-643A Brush complete
- 2—O-609A Handles
- 1—O-644A Handle Adapter
- 1—O-672 Inlet
- 1—O-675 Inlet Plug
- 2—O-673 Male Terminals
- 7—O-681 Copper Floats
- 1—50 Ft. Length 2" I. D. Rubber Lined and Rubber Covered Hose
- 2—125 Ft. Lengths of water proof Manila Rope

REPLACEMENT PARTS

| Part No. | Description |
|----------|--|
| O-641A | Cleaning tool assembled complete |
| O-643A | Brush complete with screws |
| O-602 | Adjusting screw for brush |
| O-603 | Lock washer |
| O-605 | Lock washer pin |
| O-608 | Lock nut |
| O-671 | Bronze wheel |
| O-645 | Axle for nozzle wheel |
| O-646 | Axle for frame wheel |
| O-607 | Cotter pin for axle |
| O-648 | Hex. head cap screw |
| O-609A | Handle assembled complete |
| O-609 | Tube (not shown separate on picture) |
| O-611 | Plug (not shown separate on picture) |
| O-613 | Extension holder (not shown separate on picture) |
| O-644A | Handle adapter complete |
| O-649 | Adapter bolt and nut |
| O-638 | Wing nut for clamp screw |
| O-639 | Clamp screw |
| O-672 | Inlet |
| O-675 | Inlet plug |
| O-673 | Male terminal |
| O-676 | Female terminal |
| O-681 | Copper floats |

HOSE—standard lengths 25 and 50 feet
2" inside diameter

NOTE: Use female terminal in one end of extra length of hose when additional length of hose is required.
Brushes rebristled and sewed (when returned to factory).

\$2.50

STANDARD POOL CLEANER COMPANY

MANUFACTURERS **TUEC** POOL CLEANERS

1204 SHADYSIDE AVE S. W.
CANTON, OHIO

Dear Friends;

As you are using one of our Tuec suction cleaners in your swimming pool you will need replacement parts from time to time. We suggest that you file this parts list for reference in ordering parts. Prices furnished on request.

There are a few things that should be carefully checked on your cleaner to insure the results you should get from this equipment. The wheels replaced, when worn, so the nozzle itself is not damaged. The brush adjusted one sixteenth to one eighth inch below the wheels, and when worn out, returned for rebristling. The hose replaced, when it is worn, to avoid loss of suction at the nozzle.

The Standard Pool Cleaner company was organized by three former employees of The United Electric Corporation who formerly manufactured the Tuec cleaners. We have taken over the pool cleaner division of that corporation and will continue to manufacture and sell the cleaners under the trade name Tuec. We specialize in pool cleaning equipment and we know these cleaners will give satisfaction if the proper pump is used and the cleaners kept in repair.

Yours very truly,

STANDARD POOL CLEANER COMPANY

Carl Amist
Sales Manager

Report On The First Annual

S W I M M I N G P O O L C O N F E R E N C E

State of Illinois

UNIVERSITY OF ILLINOIS

June 6 and 7
1939

Sponsored by

State Department of Public Health,
Division of Sanitary Engineering
and
University of Illinois
School of Physical Education and
Physical Plant Department

I N T R O D U C T I O N

The following is a report of the material presented at the First Illinois Swimming Pool Conference:

This conference, the first of its kind to be held in this State, was sponsored by the State Department of Public Health in cooperation with the University of Illinois Physical Education Department. It is an outgrowth of small sectional meetings of swimming pool operators which have been held throughout the State for the past two years as part of the State Department of Public Health's swimming pool program. This conference was an effort to enlarge on the subject matter so as to present a diversified program for all persons who are interested in the various phases of swimming.

The conference was fortunate in securing outstanding men in their particular fields and it is hoped that their contributions herein presented will be a means of further popularizing swimming as a healthful recreation and of acquainting those interested in the many phases of this sport with more recent developments.

It is believed that all of the material here presented was of an exceptional calibre.

If this material aids in a better understanding of not only the engineering and architectural problems but also the health, recreational and social aspects offered by the modern swimming pool, it will have served its purpose.

* * * * *

"THE DOCTOR LOOKS AT SWIMMING"

By

J. Howard Beard, M.D.
Director of Health Service
University of Illinois

The paper presented by Dr. Beard is outstanding and has already been heralded as one of the most notable contributions ever delivered on this subject.

* * * * *

THE DOCTOR LOOKS AT SWIMMING

J. Howard Beard, M.D.

Swimming is the King of Sports. Its great age, its excellence as exercise, its world-wide enjoyment, and its rating as big business warrant this title. Wherever the climate permits, swimming is a leading sport. Football, with its costly stadium, high salaried coaches, and highly trained publicity experts pales into insignificance beside the millions invested in an Atlantic City, the pageantry of a Miami Beach, or the interest in the selection of the bathing beauty of the year.

If there is the slightest doubt concerning the transcendence of swimming over other sports, a trip to the World's Fair at New York will remove it. There is no place on the Fair Grounds where a goal can be kicked from the field, nor a ball driven into the bleachers with all the bases filled. But swimming! Ah - there is a difference - a colossal difference. An aquacade in which glamorous girls glide gleefully through the glowing water pursued by ex-Tarzans and ape-men makes the fans and bubbles of a Sally Rand seem Victorian and cumbersome as a bathing suit of the Gay Nineties.

Solo swimming, duet bathing, and water "clowns more exhilarating than seals" both entertain and bewilder. A whole corps de ballet of swimmers go through geometrical figures to the rhythm of an orchestra. Between swims there are parades of pretty girls in Parisian costumes designed by Pene du Bois. They are set forth in bold relief against a background painted by so gifted an artist as Albert Johnson. Swimming, Mr. Chairman, is not only the King of Sports, but also the Sport of Queens.

The date of the return of our ancestors to the water after having left it for the trees is lost in the mists of the uncertainties of evolution. Some of them, while swinging from limb to limb in over-confidence, slipped, there was a splash, and the first stroke was taken; or possibly one of our Neanderthal grandsires, finding himself between a saber-toothed tiger and the deep blue sea, chose the less of two evils, took to the water, lived to tell of his experience, and became the first instructor in swimming.

Through the eyes of a doctor, swimming is not only a plunge and a stroke, but exercise, the cultivation of grace, the promotion of health, the institution of safety procedures, big business, romance, and art. He sees swan dives, Australian crawls, blistered backs, drownings, and artificial respiration. Yes, even "two-piece bathing suits of hand-blocked wool with a pine tree figure," symbolizing man's existence in the primeval forest before Eve ate the forbidden fruit and discovered she was naked, (a fact ascertainable on a modern bathing beach without taking dessert). When a doctor looks at swimming, he sees beauty contests, parades of pulchritude, a trial in Hollywood, a trip to Reno, or, more happily, a column telling us they lived like doves ever afterwards.

To the physician, even the radio is an important accessory of swimming. Through it the daughters of Eve are promised creams to match the seashore, or an ideal tan while the handsome lifeguard takes time out for a coke. They hear the brevity and low visibility of the latest creations of bathing costumes extolled by high pressure salesmen with baccalaureate degrees from colleges of commerce, and learn "puny softies" may acquire form and vigor from vitaminized cans, sunkist drinks, and rejuvenating cigarettes.

Gone is the Old Swimming Hole

What a change! The old swimming hole of happy memory is an extinct as the dodo. It has been commercialized into a bathing beach. Even the park pool has cast off its proletarianism to become the community natatorium. Men who once clad like September morn defied chiggers, mosquitoes, biting gnats, and horseflies on land, and leeches, sea nettles, and snakes in the water, for a swim are no more, or, like Ferdinand, are content to sit in the shade. Some of the frog catchers of other days have become indulgent fathers of daughters in ultra-modern beach pajamas, girls whose aquatic performances are as strenuous as having wavelets ripple between the toes of their "athlete's feet." Or worse, they are the proud sires of sons who hide themselves on the beach in sand beneath stylish umbrellas to listen to swing music from their portable radios.

Yesterday, the instructor in swimming was a coach. Today, he is a professor of natation. Tomorrow, he will be a natatorial artist. A few years ago he taught diving and strokes. To this accomplishment he has had added life saving according to the gospel of the Red Cross. Now he must be able to select a Miss America with the diplomacy of a Paris deciding between a Juno, a Minerva, and a Venus. He must be prepared to step before the microphone on a moment's notice to sell a beach with the conviction of a Bill Hay promoting Campbell's soup, or he must be able to outline the fine points of beauty judging with the clarity of a Lady Esther distinguishing between the various shades of lipstick.

Swimming is a Big Business

Swimming is a "magnificent" enterprise resting securely on the customs, shifting styles, social ambitions, fads, and foibles of a delightful and "bejittered" people. It requires engineering, architecture, and art to construct its pools, protect its beaches, and beautify their surroundings; bacteriology and sanitary chemistry are essential to provide safe water and to keep it free from pollutions.

Bathing places, to be successful from the standpoints of health, recreation, and finance, must be planned carefully, located wisely, and thoroughly safe. Neglect of any of these important factors will doom them to failure. Around swimming pools and bathing beaches there should be an atmosphere of wholesomeness which leaves little to be desired when measured by standards of health, recreation, social progress, and moral excellence. Swimming, like all Gaul, may be divided into three parts, namely sanitation, safety, and the swimmer.

Sanitation

In having a doctor look at swimming, I shall reduce to a minimum consideration of the many details involved in the operation of swimming pools and the management of bathing beaches. These are adequately covered in the latest edition of "The Report of the Joint Committee on Bathing Places of the Conference of State Sanitary Engineers and the American Public Health Association" or in "The Minimum Sanitary Requirements for Swimming Pools and Bathing Places," of the Illinois State Department of Health. Both of these pamphlets are readily available. If you have not already read them carefully, I would advise you to do so, since the first is the Bible of the operators of swimming pools and the second is an excellent bulletin which contains the law of the land if the pool is in Illinois. The measures used to insure the safety and sanitation of swimming pools and bathing beaches, like the basic sciences of medicine, are physical, chemical and biological.

Physical Procedures

The physical factors in the sanitation of bathing places are their location, design, and construction. To be successful financially, recreationally, and from the standpoint of health, bathing beaches and swimming pools must be readily accessible to the public, as far removed as practical from sources of pollution, and in attractive surroundings.

Under design and construction we include all the engineering and architectural features which reduce contamination, prevent drowning, safeguard against injury, promote cleanliness, and provide for the comfort of the bathers. The sloping of the floors, runways, and sidewalks, the provision of scum gutters, the location of inlets and outlets, the arrangement of the showers and the placing of footbaths are structural considerations which may contribute quite materially to the sanitation of both indoor and outdoor pools.

The arrangement of dressing rooms; the adequacy of toilets, lavatories, and showers; suitable temperatures of both the room and the water; and good ventilation are conducive to sanitation through the cleanliness and comfort of the bathers. Recirculation systems and their accessories and filtration are all essential physical or engineering and architectural factors in swimming pool sanitation.

Safety

The depth of the water, the height of diving boards, the sloping of the bottom of the pool, its markings, the number of swimmers permitted in its various zones, and lighting have a direct bearing upon the occurrence of accidents. The reduction of turbidity by storage, coagulation, sedimentation, filtration, dilution, or other processes of clarification is also a measure of safety. The provision of a special closet for chlorine containers, the avoidance of cross connections, and the insurance of good acoustics are likewise important safeguards.

Chemical Considerations

The chemistry of swimming pool water may affect its sanitation, safety, cost of operation and popularity. When large quantities of calcium bicarbonates are present in the water it may become difficult to keep it clear. The excessive use of alum may cause turbidity by the substance passing through the filters in solution and producing a floc in the pool. The use of chloride of lime may also increase the cloudiness of the water until the pool is unsafe. The continuous use of alum, the presence of calcium sulphate, and calcium hypochloride or of chemicals added to influence the reaction of the water may lead to the formation of deposits in the circulating equipment and to consequent turbidity.

Hardness in water, due especially to the salts of calcium and magnesium, adds to the expense of operation of bathing places by increasing the cost of soap, liming of heaters, and clogging of strainers. One grain of calcium carbonate will use up eight grains of soap before a lather can be provided. Thus, hard water causes an enormous waste of soap. The scale of heaters is usually a deposition of the sulphates and carbonates of calcium and magnesium. These substances damage valves and otherwise hasten the depreciation of plumbing.

The color of swimming pool water may be of both organic and inorganic origin. In some instances in outdoor ponds it may be an extraction from such vegetative matters as leaves, bark, or roots, or its source may be algae. Manganese and especially iron are inorganic substances which give the sides, bottoms, and fixtures of pools a more or less characteristic color. The greenness

of pool water may be changed to a beautiful blue by over-chlorination. This treatment gives rise to the formation of a rusty precipitate which settles to the bottom of the pool. This sediment may be iron or iron organisms. Possibly this lessening of turbidity may lead to greater reflection of the blue part of the spectrum. Use of the algaecide, copper sulphate, may also have an effect on the color of the water. The presence of chemicals, color, or organic matter in pools may add both to their cloudiness and to their cost of operation by increasing their chlorine demand.

In certain pools where both ammonia and chlorine are used, excessive amounts of nitrites may occur and interfere with the accuracy of the ortho-tolidine test for residual chlorine. Nitrites may be found in pools where chloramine is not used. Frequent determination for nitrites should be made, and the ortho-tolidine solution used should be such as not to be influenced by them.

The amount of available or excessive chlorine in a pool should not be less than 0.4 p.p.m. nor more than 0.6 p.p.m. This can best be obtained by the use of chlorine as a gas or in water solution and by continuous rather than by intermittent dosage. High alkalinity of the water is said to have a definite effect in the reduction of the loss of chlorine from disinfected swimming pools and to cause less trouble with chlorine odors.

Chloramines are slower acting disinfectants than chlorine and to this extent are not so safe. They are, however, more lasting and higher disinfectant dosages may be carried without causing irritation of the eyes and nose. In large or outdoor pools, chloramine may also have certain advantages. Where it is used, the amount available should not be less than 0.7 p.p.m. nor more than 1.0 p.p.m.

Bathing Beach Biology

The most troublesome organism to be found at bathing beaches is a species of anthropoid often called Homo Sapiens, or "Man, the Wise." This designation is a misnomer because this form of life is often neither wise nor manly. These vertebrates will sometimes multiply so rapidly in a pool that those on the swimming board will be jumping on those in the water, crippling or drowning them. The more adventuresome will climb into towers, balconies, rafters, or trees and dive head first into shallow water, killing themselves and interfering with the operation of the pool.

At bathing beaches "Homo, the Sap" fills himself with sizzling steaks or fried chicken and immediately plunges into the lake to demonstrate how far he can swim in deep water on a full stomach before he drowns. Year after year this experiment creates great excitement at summer resorts, causes lifeguards endless headaches, gives fishermen a chance to make a few dollars with their grappling irons, and stimulates the undertaking industry.

As a rule most warm-blooded animals will avoid cold water and will not deliberately go beyond their depth. Even polar bears will not break through ice in winter to stand shivering in ice water while photographs are made for the rotogravure section of the police gazette.

Warnings mean little to Homo. He will plunge into deep fresh water lakes in early summer, stiffen, cramp and go down. He will defy currents and tides to be drowned. He often seems possessed with the fixed idea that if he can not swim in water up to his neck, he will do so with ease where it is forty feet deep. This paranoia has ruined many vacations and has cost insurance

companies large sums.

When Home Sapiens gets into the water his sanity seems often to become so diluted that he is unable to take care of himself. At a great eastern summer resort, a few years ago, the life guards were thrown into a panic by 150 early morning bathers attempting to wade the Atlantic. They came out of their hotels to the beach and marched into the ocean with the confidence of four-year-olds paddling in the baby's bath. Once they were beyond their depth, the tide took them in charge, and all the life rescuing facilities of that world renowned resort were taxed to the utmost to save its reputation and its patrons who regarded either depth nor wave.

In passing it is interesting to note not only has man developed a strange mental attitude when around water, but he has also lost his fins and only as a "throw-back" has webbed toes and fingers. Webbing of the toes and fingers is a dominant characteristic - a hint that such a structure once had its special function and that he may be more closely related to Donald, the Duck, than the comic strip may indicate. Another fact which suggests that man's primordial existence was aquatic is the concentration of minerals in his blood stream. The ionic composition of the blood of a man and a jelly fish or of a man and a lobster are so similar as to suggest their ancestors floated lazily together in the Archaean Ocean. It also indicates the conditions under which cell life is possible are very restricted indeed and have not changed substantially since life first began.

It has been many million millennia since our aquatic ancestors slid out of the primeval ooze, found they could live in the air, and did not return at night. Through many era since, evolution has wrought many changes, among them the development of eyes, ears, and sinuses which are rather poorly adapted to swimming - a maladjustment which is the price of breaking home ties.

Without a nictitating membrane to protect the cornea and conjunctive against injury, trouble with the eyes frequently results from swimming. The temperature of the water differs markedly from that of the body, and is conducive to discomfort of the eyes. Its mineral content may also injure the eyes. Osmosis and the washing out of immune bodies may likewise have an effect. Many of us know how much easier slightly salt water is on the eyes than soft fresh water. When residual chlorine rises above 0.5 p.p.m. trouble with hyper-sensitive eyes is not far off. Many individuals may withstand several times this amount but those less resistant will have various grades of conjunctivitis or mild inflammation of the eyes. With the use of ammonia the chlorine content of the pool may be raised as high as 1.00 p.p.m. without causing many complaints.

It should be remembered that eyes are often as different as are individuals. Susceptibility, hypersensitiveness, and allergy rarely behave according to fixed standards. Lack of complaint is not always proof of the harmlessness of a chemical nor is failure to report trouble an indication that no symptoms of irritation are evident. Inflammation of the eyes may be a sign of pollution of the water. Organisms which ordinarily attack the eyes may, under especially favorable circumstances, pass from one individual to another. The use of the same towel or soap around bathing places is probably often responsible for the spread of eye infections which are frequently attributed to the lack of sanitation of the pool, or to too much chlorine.

Infection of the ear, nose, and throat may come either from the nasal passages of the individual or from a grossly polluted pool. By rare chance, highly virulent bacteria may be conveyed by water from one person to another.

In a well managed pool with adequate residual chlorine this occurrence is probably quite unusual. The organisms which cause the trouble are usually those which are already present in the nose or throat of the swimmer and are carried into the sinuses and middle ear by water.

If bathers will recall that they are no longer as well adapted to water as were their ancestors of the Mesozoic Age and will exercise proper precautions, they may save themselves a good deal of trouble. When in the pool they should breathe through the mouth and avoid getting water and nasal secretions into the sinuses. Eustachian tubes, or nasal passages. If they will exhale through both the nose and mouth they will have a quicker and stronger exhalation than through either alone.

The opening of the mouth relieves the undue pressure which may force infected material into the nasal passages. It also permits air and water to flow into the nose and mouth with a minimum amount entering the sinuses and Eustachian tubes. Improper exhaling with the head submerged may cause them to become infected. Vigorous blowing of the nose after emerging from the water may so force water into the sinuses and Eustachian tubes that inflammation may result.

In diving the diver should inspire before entering the water and not exhale at all until again on the surface. This will largely prevent getting water into the sinuses and Eustachian tubes. By holding the breath the entire time the diver is in "high pressure", a nearer equal force is exerted on both sides of the ear drums. Deep diving causes considerable pressure on the ear drums and thus forces air out of the Eustachian tubes. When the diver comes to the surface this pressure is relieved and air again enters them. If the breath is held until the diver emerges for air less water enters the nasal passages when the Eustachian tubes are again inflated and the danger to the middle ear is correspondingly decreased.

It would seem that the nearer constant the inner-outer pressure remains on the ear drums, when the breath is held in diving, the less sudden the distension by means of water pressure. With no exhalation under water the inner pressure necessary for nasal expiration which might force water and secretions into the sinuses and Eustachian tubes is absent.

When the breath is held under water the inner-outer pressure on the ear drums, though uneven, remains constant so that there is less reverse distension than if the exhalation took place below the surface. If on rising to the surface the diver promptly expires through both the nose and mouth, the sudden entry of more air into the Eustachian tubes by the removal of outer water pressure does not cause suction of water and secretions. Diving feet first may permit water to enter the nose forcibly.

Persons who have had repeated ear infections or recurrent sinusitis should avoid swimming or exercise special precautions. Those with damaged ear drums and mastoid operations are, on the whole, better off out of water. Individuals with colds should not dive and should keep their heads out of the water in swimming. For the benefit of themselves, as well as for the good of others, they should stay away from the pool until free of their respiratory infection. Divers should wear rubber caps over the ears or plug them with greased cotton to prevent infection of the drums and external auditory canals.

Swimming and Skin Disease

Swimming has a four-fold relationship to skin diseases. It may cause itching, a pruritis, resulting from contact with water. The condition lasts from a few minutes to a half hour. Young adults with dry skin are most subject to this disturbance. It is usually of no significance and responds well to treatment.

Water may markedly aggravate certain skin diseases. Individuals with certain types of exema and other conditions made worse by moisture should avoid the pool.

Swimming may promote the spread of such communicable diseases as ring-worm, and scabies, by bringing the infected and uninfected directly or indirectly in contact with one another. Athlete's foot is widespread and has stimulated the the production of many supposed panaceas. Too often they have little more therapeutic basis than wishful thinking and economic gain. Foot baths of various kinds have been advised, but most of them have proved ineffective because the trichophyton is quite resistant, the chemical can not be used in sufficient concentration without causing irritation or the swimmers will not stand in the solution long enough to allow sufficient time to destroy this fungus. Fungicides may have an inhibiting effect, but to expect more of them is to be quite optimistic. The best protection against athlete's foot is cleanliness, dry foot, and foot covering which protects the infected against re-infection and the uninfected against the infected.

Polluted water may contain either animals or plants which may parasitize the skin and cause inflammation. The cercaria or larval form of the Schistosoma is a notable example. Possibly certain mycoses may pass from one individual to another by way of the water of poorly managed swimming pools. Mycotic infections are often spread by the common use of towels, brushes, combs, etc.

Venereal Disease

Some years ago swimming pools were reported to have been a source of venereal disease. They were small, highly polluted pools and those infected were females. A well managed pool with a residual chlorine content of 0.4 - 0.6 p.p.m. is not a factor in the occurrence of gonorrhoea or syphilis in a community. The relatively low temperature of the water, the presence of chlorine, and the difficulty with which the gonococcus and the spirochaeta pallida survive outside of the body insure against transmission of venereal disease in swimming pools.

In highly polluted pools under specially favorable circumstances, it is conceivable the gonococcus may get into the eyes of swimmers and cause inflammation. When this occurs, with the exception of the one chance in a million, the pool has to be indescribably dirty, its management incompetent, the cleansing shower neglected, and its chlorine content too low to be effective. The common use of towels and possibly of soap offers an opportunity for the gonococcus to pass from one female to another or to get into the eyes and produce a very serious type of conjunctivitis.

Castro-Intestinal Infections

Typhoid fever, the dysenteries, and other diseases whose transmission is accomplished by bacteria passing more or less rapidly from the intestine of one individual to the mouth of another may be conveyed to swimmers in several ways:

1. Within the pool itself - if it is poorly managed and its residual chlorine is inadequate.
2. By pollution of the water outside of the pool and insufficient disinfection before it reaches it.
3. By bathing in water too close to its source of pollution and thus not giving an opportunity for purification by dilution. Swimming near the outlet of a sewer is an excellent example.