NEHES Affiliates With AHA
And ASHE Organizations

Annual Meeting
To Be Held At
The Hotel Lenox

Al Rouse and Gil Messolino have prepared an excellent program for the annual meeting to be held on Tuesday, March 28, 1967, at the Hotel Lenox in Boston.

Communications
Audio Nurse Call Stations
Closed Circuit Television

The above subjects will be carried by a panel consisting of New England Hospital Engineers' Society men who are well versed in the field. Alexander Bender of the Gaylord Hospital and Sanitarium in Connecticut; Alan Rouse, Administrative Engineer, New England Baptist Hospital of Boston, and Gilbert Messolino, Superintendent of Buildings and Grounds at Massachusetts General Hospital, will comprise this group of talented men.

The above subjects will be discussed and presented in detail to the members present by a well known group from the Motorola Corporation. A glimpse into the future with displays by this firm will bring the points home in fine fashion.

There will be a question and answer session followed by luncheon and the annual business meeting.

(Continued on page 2)

Know Bill Doherty

During the past few years Bill Doherty has been serving on committees and for the past year has been doing an excellent job as Secretary of the New England Hospital Engineers' Society. Attending committee meetings, putting forth thoughts, and keeping track of the involved and frequently voluminous paper work has kept Bill in the forefront of the activities of our Engineers Society. He has given generously of his time and has carried out his appointed duties in an excellent fashion.

(Continued on page 3)

A Funny Thing
Happened At
The Institute

During the Institute held in Boston last December by the ASHE-AHA, several officers of the NEHES and officers of the ASHE met to discuss mutual problems, and the old problem of affiliation raised its ugly head again. We reviewed the matter in chapter and verse. For years, planning, cajoling, and prevailing upon the men of NEHES to join the ASHE had been a long hard series of stumbling blocks without much in the line of success. We never were quite able to properly put this needed affiliation in the light where men accepted this as an obligation and a method of improving their own profession by being a member of the national organization.

Then it happened! With the backing of those present, Warren Marble used the stampede approach by shooting right from the hip and called from the rostrum for all men of NEHES to join the ASHE as of that moment to give the proper percentage in order to affiliate. Fifteen minutes later when the dust was settled our society for all intents and purposes had affiliated.

(Continued on page 2)
Institute

(Continued from page 1)

An offer was made to pay an advance to the AHA for all NEHES members who were willing to sign and the membership rose to the occasion beautifully. As a matter of fact, in the hassle, the NEHES Treasury even paid for one man from New England who wasn’t even a member of NEHES. Perhaps our over zealous president might even have to pay for this, since he is in the habit of paying for things such as moustaches to be removed and losses on Yale-Dartmouth football games. It really shouldn’t make much difference, since this makes Warren a consistent loser. Seriously, we should all be happy and proud of the accomplishment which occurred in a relatively short time mainly due to the efforts of our President, Warren Marble, and the ASHE Secretary, Bob Davis.

Annual Meeting

(Continued from page 1)

The annual meeting will be held at the Hotel Lenox which is two blocks away from the New England Hospital Assembly which is being held in the War Memorial Auditorium. It is the responsibility of each member to make his own reservations.

There will be a program for the wives who are coming to Boston and the program will be sponsored by Mrs. Alton Rouse and Mrs. Vincent F. Gardner. If you have questions concerning the program please call,

Mr. Alton Rouse
New England Baptist Hospital
Boston, Massachusetts

Know Bill White

Many of us who have attended seminars and annual meetings have become well acquainted with Bill White, Assistant Plant Engineer at Roger Williams General Hospital, Providence, Rhode Island. He is a state representative and on several occasions has worked with program committees and has assisted in various officer positions within the society.

Bill attended Rhode Island State College and was one of the original members with the University of Rhode Island Management Engineering for the Hospital Engineers Course. He has taken advantage of various courses and educational opportunities offered by industry.

Bill was previously employed with Brown and Sharpe Manufacturing Company in Providence, R.I., in Time Study and with the Lamson Corporation as a mechanical and electrical construction foreman. Since 1960 he has been the Assistant Plant Engineer at Roger Williams Hospital and has been deeply involved in the state organization of the New England Hospital Engineers’ Society along with the national association for Power Engineers. He presently is the association chairman of the Engineers Section of the Rhode Island Hospital Association and the state representative of the New England Hospital Engineers’ Society.

Bill is a progressive engineer who takes advantage of every educational opportunity with the men of his profession, to assist, coordinate and improve the profession.

How To Manage Your Time

Much of the working day of every executive is inevitably wasted. He is under constant pressure to use his time in unproductive ways and these pressures increase with the size of the organization. Many of them are irresistible. When a company’s best customer calls up, the sales manager can’t say, “I’m busy.” He has to listen, even if the customer wants to talk about nothing more than last night’s bridge game or his daughter’s chances of getting into the right college. Unless a hospital administrator attends the meetings of every one of his staff committees, the physicians, the nurses, or the technicians may feel slighted. And every government administrator has to pay attention when a Congressman calls to ask for information that he could get more quickly out of a standard reference book. Such time wasters consume a large part of every manager’s life.

Every manager, whatever his organization, has been exhorted for years to be a better “delegator.” Most have themselves given this sermon, and more than once. I have yet to see any results from all the preaching, however, and the reason no one listens is simple: as it is usually presented, delegation makes little sense. If it means that somebody else ought to do part of “my work” it is wrong. And if it implies that the laziest manager is the best manager, it is not only nonsense; it is immoral nonsense.

Position Report

There are several excellent positions open in hospitals in the New England Area.

Those interested should contact President Warren Marble, Danbury Hospital - Danbury, Conn.

This contact must be by letter only.
Montshire Hospital Engineers Meet Next May

There will be a preliminary meeting of the Hospital Engineers of the States of Vermont and New Hampshire at the Mary Hitchcock Memorial Hospital on May 15, 1967.

All engineers interested in attending are welcome and lunch will be provided by Mary Hitchcock Memorial Hospital.

An informal roundtable session will be held in the morning with a tour of some of the facilities requested by the personnel.

A program will be presented in the afternoon and determinations would be called for concerning the forming of an association of engineers for the states of New Hampshire and Vermont.

The New Hampshire and Vermont Associations are being contacted concerning this matter.

Know Bill Doherty
(Continued from page 2)

After graduating from public schools in Brockton, Massachusetts, he attended the United States Merchant Marine Academy at Kings Point, Long Island, from which he graduated as a Marine Engineer with a Bachelor of Science degree. He also received and holds a commission in the United States Naval Reserve. Upon graduating from the Academy, he spent four years at sea with the Socony Mobil Oil Company of New York. During this time he was able to travel through Europe, the Middle East and South America.

Upon returning from his duties at sea he went to work for the Pratt & Whitney Co., of East Hartford, Connecticut, and remained there until 1960. In 1960 he entered the service of Saint Francis Hospital of Hartford, Connecticut and in 1961 became the Plant Superintendent.

His hospital has 654 beds with all the services and responsibilities belonging to a large general hospital.

Bill is married to the former Rita Provost and is the father of five daughters including one set of twins.

Bill doesn’t hesitate to tell people what he thinks, and I am sure that many of us will hear him express his opinion in the years to come within the society.

The Engineers Bookshelf

PROGRAM EVALUATION REVIEW TECHNIQUE
by Basic Systems Inc.
880 Third Avenue
New York, New York 10022
This is a combination text book and short course on the PERT/CPM system self-taught. It requires ten (10) hours of self instruction and can be used over and over by a number of personnel. A must for a modern construction program. COST - $18.75

FUNDAMENTALS OF CARPENTRY
by Walter E. Durban
Printed by American Technical Society
Chicago, Illinois
This is an ideal book for carpenters and the reference library of any Engineering and Maintenance Department. This manual type text book has a large amount of well defined details which are easy to follow. The text is not hard to understand and there are questions at the end of each chapter. It also tells which questions it will answer at the beginning of each chapter. The last chapter covers site work and the use of the transit level. This book should be in the hands of all who have not had formal instruction in the field of carpentry.

REINHOLD DATA SHEETS
by William J. Hornung
REINHOLD PUBLISHING CORPORATION
430 Park Avenue
New York, New York 10022
Engineering and Maintenance Departments that carry out projects, have drafting facilities and are going into construction will find this publication well worth the $15.00. The detailing and tables are very well done. It is up to date (1965) and covers many items needed in modern hospital design and construction.

Pay Your Dues

Please mail your dues. Do not pay in person at the annual meeting, since it causes confusion.
WHAT VALUE EVALUATION SHEETS?

At the Fall Seminar in Hartford, Connecticut, evaluation sheets were handed out to cover a hundred engineers in attendance. Only 65% of these were completed and collected.

They were given out, as is the usual case, with the hope that they would be executed at the end of the program by the listening audience. These evaluation sheets, (let's call them E S from here on) if properly and intelligently executed, could be of great value to the officers and committees of the organization in planning future meetings. If they consist of enough questions or qualifying statements that can be answered briefly and that pertain to the speakers or subjects with a reasonable amount of definiteness the E S can be of inestimable value. Such questions or statements are rather difficult to establish, however, prior to hearing the message of the speaker and usually the E S is left until the tail end of the meeting to be filled out; or insufficient time is given to the audience for perusal of the speaker and/or his subject to make and record an accurate, unbiased opinion.

During the meeting one hesitates to get involved with the E S because he doesn’t want to be distracted from the current speaker to evaluate the previous one. At the end of the meeting the listener may feel tired and somewhat burdened when asked to recall the previous subject or subjects that he has listened to and qualify either the subject or speaker or maybe the whole seminar.

The writer has observed that a very large number of any audience will either leave the evaluation sheet blank, take it with him among other papers, catalogs, etc., or fill it out in part only. I have asked others who were near me or with me if they were going to fill out the E S and too often the answer is “Too much work.” The attitude seems to be that they came to hear and learn but not to work, and thinking is hard work for some people. As the seminar draws to a close near the end of the day, some of the audience begin to leave the meeting room and fail to complete the E S and those who remain to the very end are quite often in a hurry to get out and get going toward home and do not want to take the time to complete the E S.

It is the writer’s candid opinion that these E S’s are of little or no value and that the time and money spent in preparation of these could be better used by sending out an inquiring sheet, seeking answers to well thought out questions that would compose the kind of picture that would tell facts that would be useful. Such a list of questions could be included with the seminar application and made mandatory to be completed for admission. Or milder pressure could be applied to get as large a return as possible by asking that the questionnaire be completed and turned in at the door. This need not necessarily be enforced.

At any rate this sort of E S or questionnaires, properly completed in the engineers office, unhurriedly, would be of far greater value to the Society than the usual hurried, brief, inadequate, meeting-type E S.

Samuel Thorpe
Lowell General Hospital
295 Varnum Avenue
Lowell, Massachusetts 01854

Dear Sam:

I have just read o'er your letter titled, “What Value Evaluation Sheets?” All large meetings have problems with questionnaires. The method of having an affective questionnaire is often hard to find.

Please think back to the meeting we held in Cranston, Rhode Island, whereby the questionnaire for the AHA was filled out during a part of the program. The reason this was carried out was to show that we could get nearly full compliance on a very touchy questionnaire. This questionnaire had salaries, number of men, responsibilities and areas which are generally considered sensitive subjects. We had 93% participation which was outstanding, at the actual meeting, and two were sent in after the meeting which raised the total even higher. That same questionnaire had been used at a national meeting in Chicago and the showing was well below 60% and Ed Chaffee was very disappointed and as a result he felt that the questionnaire was of no value to men of the University of Minnesota who had been working on this questionnaire in conjunction with the AHA. I informed him that the NEHES would be glad to comply providing that a confidential stamp had been put on the questionnaire and that this would be filled out during the meeting with the proper guarantee and safeguard along with an allotted time. We were able to succeed in doing this and fortunately this was not done at the conclusion of the program but about two thirds of the way through the program. I realize that people do have a tendency to scatter and leave before the end of a program and also they feel that they are being imposed upon to actually fill out the questionnaire.

In order to know what the general consensus of opinion is or to gather data it is absolutely necessary that questionnaires and evaluation sheets be prepared and be filled out by the membership in attendance at the meeting.

Unfortunately men will not fill out these evaluation sheets in their offices upon returning to their hospitals. There are some firms which will serialize and send follow-up questionnaires to engineers and more or less force them to fill out the questionnaire at home or in their office. This requires a great deal of time and effort by the parties actually sponsoring the evaluation of questionnaire sheets.

I concur that we must do a better job with the evaluation sheets but it should be carried out at the seminar institute or session being held for the engineers and some time should be placed aside for filling these out and there should be adequate explanation from the rostrum in order to assist those filling out the information.

Very respectfully,

L. B. Ely, Jr.
Editor-N. E. H. E. S.
HOW DO HOSPITAL ENGINEERS RATE AS NOISE MAKERS?

How do you, as a hospital engineer, rate yourself in your ability to communicate?

Basically our way of life is governed by our ability to communicate. How we accomplish it is another matter. Communications and human behavior are tied together and very importantly, since every person we meet and talk to creates an opinion of us (in their own mind) primarily by what we say to him or her. Actually (as odd as it may seem) we are making noise. These noises I refer to are words.

Words are merely a medium by which meanings are transmitted from sender to receiver and vice versa. Words in themselves have no meanings; the meanings are within people. Therefore what you say is evaluated by another who, I might add, may often tend to jump to conclusions saying, "Yah," "That's great!" "I understand," when in actuality he's evaluating your words in his frame of reference. By frame of reference, I mean that each person has a certain social economic background which may govern his meanings or interpretations.

A maid, for example, wouldn't tell a hospital engineer how to set controls for an air-handling unit. You probably have run across this problem.

The English Language has some 60000 words, 2000 of which are commonly used and 500 of which are most used. Of the 500 words (most used) there are 14,000 meanings. More specific definitions are obtained using words which are infrequently used (2000 word group).

The hospital engineer would be required to use the 500 word group more often so that the maid would understand him. In doing so, has she evaluated his statements incorrectly by giving the words another meaning than that intended? We're often guilty of thinking we've communicated when in actuality we haven't.

Some people close their minds to communications. Again, we merely are talking and making noise. Their reply is "Well we've always done it this way," when in reality they're saying, "Don't confuse me with the facts, I've already made up my mind." As a supervisor, human relations are forced into your lap. The employee must realize here, that change is interrelated with growth. A fear in loss of security is injected with change. Some term this as stubbornness. Has this been a problem?

There are answers to these problems though: Better communications and human relations. The wise hospital engineer "never begins by asking, "How am I going to motivate that man?" The basic question is, however, "What must I do to myself?" It is what you are that matters!" because what you are always determines how you respond to others. In human relations it is never so much what you say as what the other person senses. The speed and accuracy with which unconscious mind tells unconscious mind the truth is amazing."

When we're faced with the problems of our people's misevaluation of our statements, words meaning so many things, and stubbornness, how can we communicate effectively? Here, perhaps, are some answers in question form. How do you as a hospital engineer rate as a noise maker?

1) Do you use the proper context when using words which may be interpreted with varied meanings?

2) When you receive an evaluation of your statements by a reply such as, "Yah," "Great," do you keep going on the topic or do you solicit questions or better perhaps ask the person to whom you're talking to rephrase what you meant?

3) Do you keep to the topic at hand or go off on a tangent?

4) Do you do all the talking or ask the individual questions as to his ideas, meanings and more or less encourage participation or a contribution to the problem?

5) Do you objectively accept or reject an opinion and if either, do you compliment or scold and order?

6) Are you tactful in trying to arrive at a common communicating level or do you use flowery words? Trivial words?

7) Do you attempt to clarify another person's meanings or your own?

8) Do you constantly repeat what you've previously stated until it becomes dull and meaningless to the individual?

The path to better communication is a long and crooked one. Your remembrance that words do not have meanings but that people do, that some people close their minds to communications and that people tend to interpret meanings as they choose will help to straighten this path.

—By Verne Clow

American Society For Hospital Engineers — A Success

From December 5 - 9 last year more than 120 hospital engineers of N.E.H.E.S. and A.S.H.E attended the Fall institute conducted by A.S.H.E. in Boston’s Sheraton Boston Hotel.

Bob Davis, Secretary of A. S. H. E. and Director of the Division of Plant Operations for A. H. A., welcomed the assembled engineers to the institute. The program provided a well rounded agenda, which included Preventative Maintenance, "Critical Path Method," "Conductive flooring," "Water Treatment," "Management Problems" and "Talks by Engineers."

The institute concluded the week with trips to various institutional complexes in the Boston area and a banquet held at the Deaconess Hospital where prizes were awarded for the most successful talks given by the engineers. The informality, friendliness, and excellent planning of the session made it successful to those who attended.
UPGRADING OUR LEARNED VOCATION

By Roy Dodson

Opportunity knocks and we must open the door. We must be professionals. Webster defines a professional as one who engages in a learned vocation. To be professional, therefore, we must know our vocation and continue to study and keep abreast of progress.

Traditionally, Hospital Engineers have been poorly paid and associated with oiling, wiping and cleaning. Management has been quite lenient in the matter of our qualifications and inefficiency. However, with the use of computer technology and advancement and some of us being upgraded in pay and prestige, we must seriously consider the responsibility that will inevitably accompany progress and advancement. In the near future we may, if you haven't been already, be confronted with such things as programming, planning, scheduling, follow thru, time studies, specialization, etc. Unfortunately, all of the Standard Operating Procedures that I have been able to get on Maintenance Engineering are geared for much larger operations than most of our hospitals in Georgia. Nevertheless, any of the proven techniques and procedures that have been used successfully in large industries can be implemented on a scale proportionately to our operation and to a great advantage.

Some of the things I think would be worth a try are: (1) The Chief delegating more responsibility to the Indians, and cooperating with them to accomplish this responsibility. This casts a different light on things and makes the individual think and apply himself. (2) The more detailed record keeping required by Medicare and the employment of computer technology by management can be a great advantage to us if we play our cards right. For example, if we supply truly accurate, detailed accounts of the cost of the materials and manhours in relations to specific pieces of equipment to management, they could feed it to the computers and quickly find out with confidence when it is more economical and practical to replace, upgrade generally some of the old worn out equipment that keeps giving poor patient care and discomfort and we gripe about patching and tinkering with. I think that some of us resent management taking such a close look, that we think it isn't necessary, its an added expense, and that management doesn't trust us, but I definitely feel that it is worthwhile and that the end result justifies the means.

Our reluctance to cooperate possibly indicates that we have something to hide. We can benefit by keeping true records if we have nothing to hide by proving without a doubt our worth in relation to contractual services and personnel. By more economical, courteous and understanding services in most cases by being professional ourselves. (3) It is said that the closest place to a man's heart is his pocketbook. I feel that weekly, monthly, or quarterly gripe sessions within the department are worthwhile to encourage suggestions, cut down on cliques, backbiting in back room sessions, and air complaints in general without fear of reprisal. Even though I might not ever personally be able to cash in on an award and the fact I'm sure management does not resent or would resist suggestions, I feel that an Incentive Award program would definitely effect additional savings and who knows this just might be the impetus for someone to come up with something. (4) Last, but not least we all, chiefs and Indians alike (Indians especially), should always and at all times keep the care and comfort of the patient foremost on our minds.

This article was not copied which is certainly indicated by its contents and not written to criticize anyone's position in the "Saddle" because we are keenly aware that things look a lot different from the saddle. It was written by this writer mostly because one of our illustrious leaders who has a great deal of influence with the gentleman that signs my check suggested it.

Mr. Dodson is a maintenance engineer Crawford W. Long Memorial Hospital, Atlanta.

Well Done N.E.H.E.S

To the officers, committee members and membership of the New England Hospital Engineers Society, we of the American Hospital Association and the American Society for Hospital Engineers want to thank you all for the excellent cooperation, time, effort and hospitality shown during the Institute held in Boston during December. Needless to say, your affiliation came as a wonderful surprise bonus which makes us very happy. On behalf of the officers of the American Society for Hospital Engineers and myself, thanks again.

Robert N. Davis
Secretary A. S. H. E.
Director Division of Plant Operations
American Hospital Association

CONTRIBUTIONS TO THE NEWSLETTER

YOU ARE INVITED TO SUBMIT MATERIAL AND NEWS ITEMS FOR PUBLICATION. SUBJECTS SHOULD BE OF SPECIAL INTEREST TO ENGINEERING AND MAINTENANCE PERSONNEL IN THE HOSPITAL FIELD.

L. B. Ely, Jr.
Editor
Mary Hitchcock Memorial Hospital
Hanover, New Hampshire
COMPUTING HEAT LOSS FOR RADIATION

The basic rule for computing heat loss is:

**HEAT LOSS = AREA X WALL EFFECTIVENESS X DEGREE TEMPERATURE DIFFERENCE**

**AREA:**

Refers to the square feet of only that surface which is exposed to a temperature less than room temperature, ie, roof, floor, walls, windows, doors. Note that no heat is lost between adjacent rooms if each is heated.

**WALL EFFECTIVENESS:**

Expresses the ability of a certain type of material to resist the flow of heat. A heat-flow transmission coefficient has been assigned to every type of commercially used surface. (Coefficients shown below on separate page and in American Society for Heating and Venting Engineers Guide.)

**DEGREE TEMPERATURE DIFFERENCE:**

Is the arithmetical difference between the inside room temperature and the coldest outside temperature likely to occur in a given locality, expressed in degrees Fahrenheit. (A.S.H. & V.E. GUIDE gives a comprehensive listing of temperature differences throughout the country.)

**HEAT LOSS:**

Measured in B.T.U.'s is the unit of measure we use to indicate the amount of heat a certain room or rooms loses. The supply of heat we need to replace this loss will also be measured in B.T.U.'s, since we would order convectors or radiators according to B.T.U. capacity. A British Thermal Unit is a measure of the amount of heat required to raise the temperature on one pound of water through 1 degree Fahrenheit.

The Heat Loss Formula may now read:  
\[
\text{Heat Loss} = A \times U \times T \quad \text{B.T.U.'s} = \text{Area} \times \text{coefficient U for wall effectiveness} \\
\times \text{temperature difference} \\
(\text{inside - outside})
\]

The coefficient U is a letter representing the effectiveness that a certain material has in resisting heat loss. Its numerical quantity is given in the American Society of Heating and Venting Guide.

Time is also a factor to consider. If a wall has a heat loss of 600 B.T.U.'s, it is necessary to know whether this loss takes place in one minute, one hour, or one day. It is customary to express all heat losses in terms of BTU per hour, written Btu/hr.
For a given construction, U is always the same and for a given locality the inside and outside design temperatures are fixed. Therefore the product of U and T is always a constant number. If an outside temperature of 70°F is chosen, and an outdoor design temperature of 0°F is used, then T = 70°F - 0°F. If the known heat transmission coefficient U is multiplied by 70°F, a combined number will be found, which for convenience will be called the K factor. All that is necessary now is to multiply the area in question by the combined K factor to arrive at the heat loss in Btu/hr. Thus:

Heat Loss in Btu/hr = A x K

You can now make up your own Heat-Loss table (as the one shown) by merely multiplying the square feet of surface areas by your temperature difference and by your U factor as given in the ASHE & VE Guide.

**Plan for Ex. Of Heat Loss Computations**

The K chart, it should be remembered is figured from your factors listed in the ASHE and VE Guide or taken from pamphlets given you by a heating and venting dealer.

Here is an example of how it is figured:

\[ K = UX \text{ (temperature inside - temperature outside say } 70°F - 0°F) \]

For Partition - From figure called typical heat transmission coefficients

\[ K = .26 \times 70 = 18.2 \]
## Typical Heat Transmission Coefficients

<table>
<thead>
<tr>
<th>Type of Construction</th>
<th>Heat Transmission Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Frame Wall</td>
<td></td>
</tr>
<tr>
<td>Wire Lath &amp; Plaster</td>
<td>.26</td>
</tr>
<tr>
<td>2. Frame Wall - Same as above but with rock wool insulation between studs</td>
<td>.10</td>
</tr>
<tr>
<td>3. Ceiling with unfinished attic</td>
<td></td>
</tr>
<tr>
<td>Ceiling Joist</td>
<td></td>
</tr>
<tr>
<td>Metal Lath &amp; Plaster</td>
<td></td>
</tr>
<tr>
<td>4. Single Glazed Windows</td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
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</table>

### Wall

<table>
<thead>
<tr>
<th>No.</th>
<th>Frame Description</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wood siding or clapboard on sheathing, no insulation</td>
<td>18.2</td>
</tr>
<tr>
<td>2</td>
<td>Same, but insulated with rock wool between studs</td>
<td>7.0</td>
</tr>
<tr>
<td>3</td>
<td>Wood shingles, no insulation</td>
<td>10.3</td>
</tr>
<tr>
<td>4</td>
<td>Same, but insulated with rock wool between studs</td>
<td>7.0</td>
</tr>
<tr>
<td>5</td>
<td>Stucco, no insulation</td>
<td>22.4</td>
</tr>
<tr>
<td>6</td>
<td>Same, but insulated with rock wool between studs</td>
<td>8.4</td>
</tr>
<tr>
<td>7</td>
<td>Brick veneer, no insulation</td>
<td>19.6</td>
</tr>
<tr>
<td>8</td>
<td>Same, but insulated with rock wool between studs</td>
<td>9.1</td>
</tr>
</tbody>
</table>

### Ceiling

<table>
<thead>
<tr>
<th>No.</th>
<th>Wood Description</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Joists &amp; plaster, no floor above, no insulation</td>
<td>24.1</td>
</tr>
<tr>
<td>2</td>
<td>Joists &amp; plaster, rough floor above, no insulation</td>
<td>10.5</td>
</tr>
<tr>
<td>3</td>
<td>Same, with rock wool insulation</td>
<td>4.0</td>
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### Concrete

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4&quot; concrete, furred &amp; plastered, no insulation, no flooring above</td>
<td>13.0</td>
</tr>
<tr>
<td>5</td>
<td>Same, with 1&quot; rigid insulation</td>
<td>8.8</td>
</tr>
</tbody>
</table>

### Floors (Above Ground)

<table>
<thead>
<tr>
<th>No.</th>
<th>Wood Description</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Joists, double flooring, rockwool &amp; sheathing</td>
<td>7.0</td>
</tr>
</tbody>
</table>

### Doors & Windows

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<th>No.</th>
<th>Type Description</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Doors, single glazed windows</td>
<td>79.1</td>
</tr>
<tr>
<td>2</td>
<td>Storm doors and windows</td>
<td>41.0</td>
</tr>
<tr>
<td>3</td>
<td>Double windows (Thermopane)</td>
<td>43.4</td>
</tr>
</tbody>
</table>
EXAMPLE OF HEAT LOSS COMPUTATION
BTU'S/HR

Location: Hanover, New Hampshire
Inside Temperature: 70°F - Outside 0°F
Temperature Difference: 70°F - 0°F = 70°F

<table>
<thead>
<tr>
<th>ROOM</th>
<th>ITEM</th>
<th>AREA</th>
<th>K</th>
<th>HEAT LOSS</th>
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</thead>
<tbody>
<tr>
<td>Living Room</td>
<td>Exposed wall</td>
<td>153</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12'x17'x9'</td>
<td>Door and window</td>
<td>55</td>
<td>79.1</td>
<td>4350</td>
</tr>
<tr>
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<td>20.0 sq. ft.**</td>
<td>98</td>
<td>18.2</td>
<td>1780</td>
</tr>
<tr>
<td></td>
<td>Net Wall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Ceiling</td>
<td>204</td>
<td>10.5</td>
<td>2150</td>
</tr>
<tr>
<td></td>
<td>*Infiltration</td>
<td>Add 10%</td>
<td></td>
<td>8280</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
<td>9208</td>
</tr>
<tr>
<td>Kitchen</td>
<td>Exposed wall</td>
<td>126</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11'x14'x9'</td>
<td>Windows (2)</td>
<td>19</td>
<td>79.1</td>
<td>1500</td>
</tr>
<tr>
<td></td>
<td>9.5' + 9.5'</td>
<td>19</td>
<td>79.1</td>
<td>1500</td>
</tr>
<tr>
<td></td>
<td>Net Wall</td>
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<td>18.2</td>
<td>1950</td>
</tr>
<tr>
<td></td>
<td>*Floor 11'x14'</td>
<td>154</td>
<td>7.0</td>
<td>1080</td>
</tr>
<tr>
<td></td>
<td>*Ceiling 11'x14'</td>
<td>154</td>
<td>10.5</td>
<td>1620</td>
</tr>
<tr>
<td></td>
<td>LOOK</td>
<td>Add 10%</td>
<td></td>
<td>6150</td>
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<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
<td>6765</td>
</tr>
</tbody>
</table>

**NOTE - Normally we add 10% to allow for infiltration around door and window cracks.

We assume in these computations that windows are single glazed, flooring is above ground and the exposed wall is wood siding or clapboard on sheathing with no insulation.