membership and frequency of church attendance were tested by a nonparametric method that is similar to single criterion variance analysis. Only one of the six tests of mean differences was significant ($P<.05$) although two other sets of differences approached significance ($.05<P<.10$) and three other P values were only slightly less significant ($.10<P<.20$). Rejection of the hypothesis predicting mean differences in favor of church-related persons appeared unrealistic since the mean differences were consistently in favor of husbands or wives who were church members or who regularly attended church. The results of the present study agreed with some of the relevant findings of the major marital success or adjustment prediction studies although in several of these investigations there were some contrary findings.

RITUAL AND MAGIC IN THE CONTROL OF CONTAGION

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TUBERCULOSIS is a contagious disease. But just how contagious is it? In what ways and under what circumstances is it likely to be transmitted from one person to another? And what procedures are most effective for preventing its transmission? The answers to these questions are quite uncertain and TB specialists show considerable disagreement in the details of the manner in which they deal with these problems. These uncertainties leave the way open for ritualized procedures that often depend more on convenience and ease of administration than on rationally deduced probabilities. They also leave the way open for irrational practices that can properly be called "magic."

PROTECTING THE OUTSIDE WORLD

In one Veterans Administration hospital, occupational therapy products are routinely sterilized by exposure to ultra-violet light before being sent out. (Patients sometimes by-pass this procedure by giving their OT products to their visitors to take out.) Books are sometimes sterilized before being sent out, sometimes not. Other articles mailed by patients may or may not be sterilized depending largely upon whether or not the patient requests it. Letters are never sterilized. The inconsistency of these procedures is not lost on the workers. One volunteer worker held up a package she was mailing for a patient and said: "Now, I can mail this without sterilizing it, but if someone wants to send home some OT work, I have to sterilize it before I can mail it for him. It doesn't make any sense."

The fact that sterilization is carried out by volunteer workers under the direction of the Special Services Division is in itself an indication that it is regarded as an auxiliary rather than an essential activity of the hospital. The extent to which sterilization procedures are a matter of convenience is shown by the reply of a volunteer worker when questioned about sterilizing books to be returned to outside libraries: "Anytime you want a book sterilized before it's sent out, just let me know and we'll do it for you. Of course, we probably wouldn't be able to do it shortly before Christmas, because that lamp will be in constant use for sterilizing OT work that the men are sending out as presents."

Money regularly passes out of the hospital without sterilization. Patients give money to volunteer shoppers, the newsman, canteen, and postal workers. These people put the money into pocket, purse, or money box, and pass it on to others without raising any questions about the possibility of spreading the disease. Quite often money changes hands quickly after being taken from the patients. The volunteer shoppers, for example, take the patients' orders and money, go directly from the hospital to town to do the shopping so that the orders may be brought to the patients the same day. In

the stores, the money passes into cash registers and pockets and is handed on to other customers as change—all within a period of a few hours. The danger of transmitting tubercle bacilli by money is probably very slight, but it is certainly many times greater than the chance of spreading the disease through books and OT products, which spend at least a day or two in transit through the mails.[1]

An even more striking example of inconsistency is shown in the policy toward visitors. Visitors are not required to wear any protective clothing, not even masks, and none of them ever do. The same is true of entertainers and members of service and veterans organizations who play games with the patients or bring them gifts. Some patients have positive sputum, so that a visitor probably runs a much greater risk of taking viable bacilli into his body than does the person who handles money, books, or OT products of a patient after a period of several hours or several days. However, TB hospitals have a tradition of permitting persons without protective clothing to visit patients, and to break such a tradition would almost certainly bring strong protests from patients and their families and would in any case be evaded by many people.

In Wisconsin the legislature prohibits public libraries and state-controlled institutions from lending books to patients in TB hospitals.[2] But the law says nothing about the protection of visitors or about other articles, which can be brought in and taken out by visitors, volunteer workers, members of service organizations, and patients themselves (when they go out on pass). The Chief of Special Services refused to guarantee the sterilization of books from outside libraries because he was afraid he might violate a law. This same man has direct control over entertainers and members of service organizations who come into the hospital, and he does not require these people to wear protective clothing nor does he try to control all the games, musical instruments, and other articles they bring into and carry out of the hospital.

In summary, the devices for protection against the spread of the disease outside the hospital are controlled largely by tradition, convenience, and adherence to legal technicalities rather than to rational estimates of the chances of transmission of tubercle bacilli. The limited efforts at preventing the transmission of the disease are concentrated chiefly in those areas where the chances of transmission are probably the least.

RANK AND PROTECTIVE CLOTHING

A number of procedures are designed to protect the employees and patients within the hospital from spreading TB. One method, which has come into prominence in recent years, is the use of protective clothing—masks, gowns, and hair coverings—which the hospital personnel are supposed to wear when they come into contact with the patients or their effects. However, this protective clothing is often not worn. There is a definite relationship between the degree to which it is worn and the rank of the employee.

I recorded the wearing of surgical cap, gown, and mask by the nursing personnel of a VA hospital when entering a patients' room over a four-day period. The results are shown in Table 1.

More detailed records were made of the use of protective clothing when entering patients' rooms in a state hospital that had a more complex nursing hierarchy. The record was made on ten different days, plus additional days for doctors and professional nurses in order to increase their very small number. The records were made on three different wards with different sets of personnel and were always for complete days to avoid the selective influence of certain

TABLE 1. WEARING OF PROTECTIVE CLOTHING BY NURSING PERSONNEL IN VETERANS ADMINISTRATION HOSPITAL

	Times Entered Room	Percentages Wearing		
		Cap	Gown	Mask
Nurses	56	100	57	75
Attendants	200	100	72	90

[1] There has been very little careful bacteriological investigation of possible transmission of TB in such "life situations." What has been done suggests that the tubercle bacilli are unlikely to be transmitted under the circumstances described.

[2] In Illinois, where there is no such law, public libraries freely lend books to TB hospital patients.

TABLE 2. WEARING OF PROTECTIVE CLOTHING BY DOCTORS AND NURSING PERSONNEL IN STATE HOSPITAL

	Times Entered Room	Percentages Wearing		
		Cap	Gown	Mask
Doctors	47	5	0	5
Professional nurses	100	24	18	14
Practical nurses	121	86	45	46
Aides	142	94	80	72
Students	97	100	100	100

work shifts or kinds of ward duties. Results are given in Table 2. The two instances of a doctor wearing cap and mask on recorded days (Table 2) both involved the same doctor—an assistant surgeon on a temporary assignment. His successor does not wear protective clothing.

As both of these tables show, the use of protective clothing is inversely related to occupational status level. The people of higher rank seem to have the privilege of taking the greater risks, particularly in the case of masks. The cap and gown are intended in part to prevent the spread of the disease to others; the mask is almost exclusively for the protection of the wearer.

It might be argued that the lower status employees should wear protective clothing relatively more often because they perform tasks which require more intimate contact with the patients and their effects. Thus, the aides and students do most of the work of collecting food trays and trash, making beds, washing furniture, picking up soiled towels. Certainly, this factor makes a difference, but it is not sufficient to account for the whole difference.

When we examine overlapping functions (those carried out by two or more levels of nursing personnel), differences, if any, are almost always in the direction of more frequent wearing of protective clothing by the lower-status employees. Table 3 gives the figures for the thirteen overlapping functions in which such differences occurred.

Why do persons with higher status wear protective clothing less often? For one thing, it is not considered necessary by people who know best. There is no good evidence that the systematic wearing of protective clothing makes any difference (even the person who planned and administered this program could cite no evidence showing its effectiveness) and people who know most about TB do not seem to consider it worth the trouble. Doctors, and to a lesser extent professional nurses, are, of course, most likely to recognize the probable futility of these procedures. The relative ignorance of the lower levels of ward employees makes it more likely that they will have doubts about whether it is safe to go without the protective clothing, especially on routine duties when they must enter patients' rooms repeatedly in a short interval. There are, of course, circumstances in which almost everyone would agree that the wearing of a mask and perhaps a gown was wise. It is the routine wearing of protective clothing for all contacts with patients that is generally rejected. Probably a more important factor is the likelihood that the employee can "get away with" a violation. A doctor need not worry about a "bawling out" for not protecting himself. A professional nurse might be criticized, but usually she is the highest authority on a ward. The chance of criticism increases down the scale. Students, who are new and unfamiliar with the situation (they put in four-week stints) and who worry about possible "demerits," wear protective clothing all the time in patients' rooms. Some ward employees, especially those of lower status, who are not "properly dressed" hurriedly don a mask and gown if they see the supervisor of the nursing education program on the floor.

MAGIC AND THE TUBERCLE BACILLUS

Gauze or paper masks are rather difficult to breathe through. To make breathing easier patients and employees sometimes pull down the mask until their nostrils have a clear space. This, of course, destroys the point of wearing the mask and the mask then takes on the status of a charm necklace.

We can also find examples of institutional magic. In the state hospital patients are required to wear masks when they go to the first floor for a hair cut or for an x-ray and when they go to the eighth floor to see the social worker or the patient services director. They do not have to wear masks (and never do) when they go to the first floor for occupational therapy, to visit with their families, to attend socials or church services, or to see

TABLE 3. WEARING OF PROTECTIVE CLOTHING BY STATE HOSPITAL NURSING PERSONNEL WHILE CARRYING OUT GIVEN FUNCTIONS *

	Times Entered Room	Percentages Wearing Cap	Gown	Mask
Take temperatures				
Professional nurses	26	19	54	46
Practical nurses	24	79	63	71
Students	6	100	100	100
Dispense medications				
Professional nurses	7	28	14	0
Practical nurses	15	87	40	40
Students	5	100	100	100
Talk to patients when not performing a duty				
Professional nurses	11	18	0	0
Practical nurses	31	87	26	23
Aides	29	86	52	55
Students	5	100	100	100
Distribute towels or linen				
Professional nurses	2	0	0	0
Practical nurses	6	100	67	67
Aides	12	100	100	83
Students	9	100	100	100
Adjust blinds or windows				
Professional nurses	3	33	33	0
Practical nurses	4	75	25	25
Aides	14	93	72	72
Students	7	100	100	100
Distribute mail				
Professional nurses	5	0	0	0
Practical nurses	3	67	0	0
Aides	6	83	33	33
Bring in food trays				
Practical nurses	10	100	80	80
Aides	21	100	100	81
Students	20	100	100	100
Collect food trays				
Practical nurses	9	67	67	67
Aides	17	94	100	94
Students	14	100	100	100
Serve drinking water				
Practical nurses	10	80	40	60
Aides	11	100	82	73
Students	3	100	100	100
Give out supplies (tissues, tissue bags, etc.)				
Practical nurses	11	82	73	91
Aides	9	100	89	100
Students	3	100	100	100
Collect soiled towels & linen				
Practical nurses	7	43	29	57
Aides	14	93	50	43
Give out refreshments				
Practical nurses	4	100	0	25
Aides	3	100	33	100
Collect trash				
Practical nurses	13	85	85	77
Aides	27	93	85	78
Students	4	100	100	100

* Because the numbers of certain classes of personnel for some functions were very small, supplementary observations in addition to those given in Table 2 were made. These observations—which were always for complete days—have been included in this table. Doctors do not appear in this table because there was almost no overlap between their functions and those of the nursing personnel.

a movie, nor when they go to the eighth floor to the library and to play bingo. An examination of these two lists shows that patients must wear masks when they go somewhere on "business," but not when they go somewhere for "pleasure," even though they use the same parts of the building and come into contact with hospital personnel in both cases.

TABLE 4. WEARING OF PROTECTIVE CLOTHING BY PRACTICAL NURSES WHEN CARRYING OUT DUTIES AND WHEN "SOCIALIZING" WITH PATIENTS

	Times Entered Room	Percentages Wearing		
		Cap	Gown	Mask
Carrying out duties	39	97	75	80
"Socializing"	23	91	17	9

The rules suggest that the tubercle bacillus works only during business hours.

The ward employee tends to wear protective clothing when carrying out her duties, but not when "socializing" with the patients. I kept a record over a short period of time on several practical nurses on the 3:00 to 11:00 P.M. shift. Table 4 shows the contrasts in their use of protective clothing. The nurses' contact with the patients was more prolonged and more intimate while socializing than while carrying out their duties. The average time spent in the room during this recorded period was less than half a minute for taking care of a duty and about three minutes for socializing. While giving out medicine or taking temperatures or bringing in food trays the nurses have very little close contact with the patients. While socializing, they often stand close to the patients, lean on their beds and other furniture, and handle their newspapers and other belongings. Logically, there is a greater need for the protective clothing—and especially the mask, which was hardly used at all—while socializing than while carrying out the routine duties.

Apparently, these nurses believe they need protection only when working. They remark that the gown, and more especially the mask, is a barrier to friendly intercourse.

MAN'S LAWS AND NATURE'S LAWS

Rationally considered, the controls and protections used to check the transmission of TB should depend on an estimate of the probability of such transmission occurring under given conditions and in given circumstances. The problem for persons responsible for controlling the transmission of TB is to set their controls and protections at a level where a "reasonable" risk is involved. Admittedly, this is not easy because of the uncertain knowledge about transmission and susceptibility and public anxieties about the disease. Even if one were able to establish general rules for a "reasonable" level of control on the basis of present knowledge about the disease, putting these rules into practice would still be a major problem. To deal with this problem realistically, the controlling agents need a good understanding of the social organization of the hospital, the disease concepts of the personnel, and the patterns of administrative thinking on the part of supervisory persons.

The practices surrounding contagion control in a TB hospital represent an effort to make man's laws approximate the laws of nature, and when nature's laws are not well understood, man's rules are likely to be more or less irrational and their observance vacillating and ritualistic.[3]

[3] Professor Everett C. Hughes pointed out to me the implications of the use of the same word "law" for both the regularities of nature and the rules of conduct made by man.