

A WOMEN'S DORMITORY FOR M.I.T.

by

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Sincerely,

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I hereby submit this thesis in partial fulfill-

Dear Dean Beliuschi:

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"A woman's place is in the home." So men have agreed for hundreds of years. The female of the species exists for two purposes alone-- to provide companionship for men and to help regenerate mankind --, or so they said. Certainly no competition with males in any manly form of endeavor is to be tolerated.

The women, however, have not always been so sure. Time was when they were content to have the man provide the livelihood and everything depended upon him. But as more and more social freedoms were established in the United States, at least, the woman was able to strike out increasingly on her own. They have been quite successful in many instances, much to the chagrin of believers in a strictly patriarchal society. They have obtained jobs and founded businesses, and still carried out their feminine obligations.

What is the woman's proper place? Would women invade the professions on a par with men if they were completely able? Or do they really want to stay with the security of life at home? The answer seems to be largely individual. One girl may want to work at a rather unimportant, well paying job for a few years, and then leave to begin to raise a family. It seems probable that after about twenty years, when her children have grown up and left home, she may want to occupy her time and energies with a job, which may assume considerable

importance. She will only be in early middle age and will have many effective years ahead. Another woman might try to dovetail family life in with a career and meet with varying degrees of success. An understanding employer seems to be a great asset in this attempt, allowing her to take time off for pregnancies and nursing. On the other hand she may find it impossible to do both and have to give up one of her interests, becoming either a wife and mother or a career woman.

Many girls seem intent upon breaking into the ranks of industry and business. Whether they are motivated by a real interest in a field or by some psychological desire for masculine conflict is again an individual thing. Some channel their efforts along this line because they feel they are unattractive and an unfit partner for marriage. It is interesting to note here, however, that less than 10% of marriageable women in this country are single (Population changes may affect this in the future.). This indicates what everyone seems to know anyway -- that women, regardless of career aspirations, are essentially home-loving creatures. Men of industry have been very reluctant to hire women for positions of importance. They feel the expense of training someone in a job which she may leave after a few months or years to raise a family is

not worth the effort; they are much more inclined to take on an older or unattractive woman whose value to the company could not be reduced to zero through marriage or pregnancy. Of course, women have long held considerable influence in certain fields such as fashions. Some professional men probably sense a threat to their station and find no way to cope with this new type of opposition. Others claim that women wouldn't find a congenial atmosphere in a largely male company. Whatever their rationalizations may be, discrimination against women in business and industry does exist, many times on quite justifiable grounds.

Perhaps one reason that women have not assumed importance faster is that there is very little machinery available for preparing them professionally. Many colleges and universities exist for their use, but very few of them train girls for jobs other than in purely clerical fields.

Why does a young woman desire to attend a college? In many cases it is the mark of high social status to be a graduate of one of the fashionable girls' schools. A girl in this position is rarely concerned about a career, college having provided an introduction to womanhood and marriage. This introduction into mature life fulfills a very real need in American society, and is the stated aim of many colleges. The alumna of such a school has been provided with an excellent general education, but does not, nor does she desire to, venture out of a world

in which she is secure and happy.

Many girls enter colleges, usually coeducational, with the avowed purpose of marriage. The education provided is incidental to the finding of a husband and they are often willing to drop out of school when they have succeeded. In addition, many girls enter college, leaving to marry later, without any preconceived intentions. Here an educational institution has become a "marriage mill" and is not realizing the very purpose for its existence. The need for social contact between the sexes is evident, but it seems a happier solution might be found if we accepted this necessity, recognized it as such, and provided for it in a less farcial way than at present.

These two cases, of course, represent the extremes. In fact, the majority of female college students do not fall into either classification. They are, no doubt, sincerely enrolled to obtain a good general education for later life and to join in the fellowship of the collegiate atmosphere. They graduate, marry, raise a family -- lead a normal life.

M.I.T., with its curriculum preparing students of high promise for positions of leadership in various scientific and engineering professions, has assumed a place of great importance in the United States today. Its facilities and faculties in many of these fields are unexcelled. It is natural that the majority of students

coming to the Institute should be men, for the technical professions are predominantly male. However, M.I.T. has long made it a practice to admit women to most of its courses, although this is not commonly realized outside of the Institute. The first woman at the school, a Miss Ellen Swallow, was admitted in 1870 shortly after its founding. The idea of a coeducational college was brand new and this girl's attendance here must have created quite a disturbance. Miss Swallow and her feminine successors were really determined to complete their studies and upon entrance into the professional world many of them achieved considerable importance, despite anti-female prejudices. Since that time the number of women students has slowly increased so that today there are some 100 of them, both full- and part-time attendance. In recent years the number has been fairly static -- about 20 freshmen girls are admitted each year. Apparently this amount is merely a percentage of the total population of applicants interested in technology; the Institute makes no conscious effort to accept or reject them except on grounds of professional promise.

To answer the hackneyed question of why girls come to M.I.T. would require as many replies as there are students, and it probably would not be any satisfaction to anyone to know anyway. Most come to obtain what they consider to be the best possible education in

a technological field. They are here for essentially the same reasons as the men, and in all aspects of their school activities do not radically differ from them. Some state that they came here expressly to find a husband, but this is a little difficult to credit entirely, considering the physical and financial load, (Actually about one-quarter of them have married M.I.T. men).

Statistics show that 85% of the women graduates of M.I.T. have worked in the field for which they trained and that two-thirds of them have married. This implies that many have been able to maintain family life while pursuing a career, perhaps proving that they are really no different from other women college graduates.

One of the things M.I.T. students have enjoyed is a high degree of independence and self-government not found at many other universities. A minimum of faculty intervention in student affairs has been noticeable through most of the school's history. Very few rules exist at all. This freedom has been shared by the girls as well and is jealously guarded. The Institute has tried to maintain a policy of sex equality as much as possible. This feeling is not held by all the male student population here, but at least they are accepted without general rancor. Individual discriminations against them do exist by faculty members and students who feel an invasion of their masculine domain, but these are the natural rigors any girl entering such a

situation must expect.

There have been women at M.I.T. for a long time and there will continue to be for a long time to come. The Institute has obligated itself to train them and indeed sees no reason why it should not. The admission policies will not change in the future, although now that more emphasis is being given to humanities here, more girls may be expected to apply. The natural level of girls seems to about 2% of the total student body at present. Most certainly outside pressure will be put on the Institute to admit more students to fill the crying need for technological trainees. Academic standards, it is felt, must be kept high, but an increase in enrollment of up to 50% must be expected in the foreseeable future. Of this number many will be girls.

FACILITIES FOR WOMEN STUDENTS AT M.I.T. - THE PROBLEM

The facilities for the coed seem to reflect her general needs at the school, although they are inadequate in some cases. The Margaret Cheney Room in the Institute's main building provides a base of operations during the day. It consists of a large living room with a piano and comfortable furniture. Adjoining it is a kitchen and area for eating meals. There is also a closed study room, while in another area is a shower room and locker space. Beds have been provided for those girls who find it necessary to work late at night or who want to take a nap during the day. Men are not generally allowed in the Cheney Room and it is considered an inner sanctum of the coeds. Housing at M.I.T. has always been heterogeneous. Male students have generally been able to secure accommodations of many types - high or low-priced dormitories, fraternities, cooperative living groups, apartments or private rooms. A coed is not faced with nearly so wide a range. If she is not living at home she may be able to obtain a room in the Institute dormitory in Boston, but, since this building accommodates only seventeen girls, many are forced to live elsewhere. Of course, many of them do not want to live there anyway. The alternative seems to be to live in a rented room or in an apartment with other girls.

Also there is at least one girls' cooperative house; and another cooperative is maintained coeducationally by students of many different schools.

The present situation is far from satisfactory. True, more freedom can be exercised than at most co-educational or girls' institutions, but often poor or objectionable housing facilities are forced upon girls who feel inequalities acutely. In some cases, girls admitted to M.I.T. have withdrawn, specifically because of the housing problem, perhaps due in large measure to parental pressure. The private rooming house many times does not produce an environment conducive to good studying and tends to isolate a girl from her fellow students unnecessarily. The rooms are often dirty and poorly lighted; control over noise is difficult and many frictions develop among tenants and proprietors.

The apartment solves many of these social problems, but the physical facilities are usually no better. Perhaps the major difficulty of all these accommodations is the distance from school. Most of the rooms and apartments are located along Beacon Street, Commonwealth Avenue, and the adjacent side streets. None is closer than half a mile and many are over a mile. The Harvard Bridge, traversing the Charles River, makes up a large portion of the journey, and

in the winter time storms often make the crossing extremely uncomfortable and dangerous. The redeeming feature of a room or apartment, of course, is its comparatively low cost.

There is a low-cost girls' cooperative student house on the Fenway where some M.I.T. coeds live. Another inexpensive alternative - the coeducational cooperative house - represents a unique living experiment. It is doubtful that there are many places in the country where men and women students can live together under the same roof in adjoining rooms, jointly managing the affairs of the house, with absolutely no supervision other than their own. Apparently the idea has been quite successful. However, in order to maintain very inexpensive accommodations and still break even, it has been necessary to house a large number of students in one building with resultant overcrowding.

The M.I.T. Women's Dormitory was established in 1946, apparently when the Institute found itself embarrassed at professing to be a coeducational institution and yet providing female students no housing facilities. A private house on Bay State Road in the Back Bay was acquired. It is in a block of four-story row houses which appear to have been better maintained in the past than some others in the vicinity. The dormitory

contains three single and seven double rooms; in addition, there is a large front room for the housemother. On the street floor are the common facilities -- dining room and kitchen, and living room.

Both personal and common areas are cramped. Closet and entertainment space in particular seem to be at a premium. Some of the bedrooms seem to be ample in size while others are too small. Bathrooms are poorly equipped and arranged. One of the basement rooms serves as a double. However, despite the overcrowding there is a happy atmosphere around the building; probably the fact that it appears more a home than a dormitory contributes to this feeling.

The need for additional or new living space is evident. Many more girls apply for admission to the dormitory each year than can be accommodated. Occasionally parental pressure is applied so that some girls are admitted who do not need the protection and security of a dormitory as much as others who are refused.

All male first year students not living at home are required to live either in a dormitory or approved fraternity, thus affording the Institute some measure of control over them. No such requirement exists for the coeds, but the administration is seriously thinking of applying the rule to them as well. This would increase the load on girls' housing. Certainly the freshmen are the girls most needing the shelter and safety

of communal living. Leaving a sheltered home life and being thrust out into a rather solitary existence in Boston has often been more than a girl could stand. Many have left the Institute for just these psychic reasons. It may be agreed, as it was in the case of the men, that requiring freshmen to live "on the campus" is a violation of the principles of individual freedom that the school professes to maintain. However, it may be wiser to permit this violation rather than deal with maladjustments later arising as a result of students being unable to cope maturely with everyday problems. The pros and cons of the question will be discussed for some time to come but probably the Institute will take the position that it has an obligation to the students and parents alike to provide some form of healthy and secure living group for all who enter.

Although, as previously mentioned in the number of girls to be admitted, percentage-wise is contemplated, outside demands for trained technological personnel will undoubtedly force an increase in total student population. Again -- the necessity for further housing is apparent.

M.I.T.'s building and expansion program provides for the construction of a new women's dormitory in the not-too-distant future. The design of such a building is the purpose of this thesis.

Other construction must come first for the general welfare and equipping of the entire student body. The new Compton Laboratories and the Student Union building are all pressing necessities and perhaps others will come before the girls' dormitory. Meanwhile, there have been many proposals for obtaining temporary coed housing. The most immediate solution seems to be to acquire some large private house in the Back Bay area or near the M.I.T. campus. This could either replace or supplement the present dormitory. Numerous schemes have been evolved; none have been acted upon. The best possibilities seem to lie in the Back Bay area but some suggestions have been brought up concerning Cambridge property along Memorial Drive. There are a few private houses next to the Graduate House which might be suited to this purpose. Cost seems to be a major deterrent to purchase of property.

Other proposals include turning one wing of the Hunkle unit of the East Campus dormitory complex into a women's center. This would involve more renovation than a private house probably, and would place girls in a rather unsatisfactory environment -- close to a dirty industrial area and sandwiched in an area inhabited almost entirely by men. They would tend to lose their identity as a group and much of the psychological security of a separate building would be lost. In addition, the men's dormitory would be

deprived of much-needed space and less return on the girls would be realized. Virtually the same proposal was made for one wing of Burton House, naturally with practically the same objections.

Another suggestion concerned using Sancta Maria Hospital, next to Baker House, as a girls' dormitory. However, the management of the hospital seems to be highly reluctant to more; they probably could not afford to relocate their plant at the price that M.I.T. would be willing to pay.

One of the above proposals may be used within the next year or two but it would be at best a stop-gap measure. A new building with complete facilities convenient to school will answer the objections of temporary housing.

THE DORMITORY PROGRAM

It was decided, as a result of a questionnaire sent to all M.I.T. coeds to determine their feelings on dormitory life, to provide accommodations for roughly fifty girls. This number would be made up of the seventeen girls living in the present dormitory; about ten of the entering freshmen, that is, those not living at home; some fifteen who are presently living in rooming houses, apartments and cooperative student houses; and eight to ten graduate students who have expressed a desire to live in separate apartments close to school.

Allowance for expansion should be provided as most certainly the Institute will grow. With a maximum increase of 50% in the student body a total of approximately seventy-five girls might be expected to desire accommodations here.

The questionnaire, which was returned by over 62% of the coeds, indicated that just about half of those undergraduates interested wanted to live in single rooms while the other half desired to live with one other person. However, it was decided to provide for more doubles than singles since one of the advantages of dormitory life is that girls are given the opportunity of learning to live with one another, enabling them to take a mature place in later life. This is looked upon as very important in many colleges and in

their dormitories there are vewy few singles or none at all.

Almost no one wanted to have more than two persons in a room. This is just as well because it is generally felt that cliques form, often of two people, and the remaining person finds herself discriminated against and rejected. This leads to providing about half the rooms as singles and half as doubles, at least for the undergraduates.

The graduates seem to have disdain for undergraduate life and desire to be away from them, in separate apartments. This would imply separate entrances and facilities for their own cooking, although the opportunity should certainly exist for interplay between the two zones of the dormitory.

In addition to these facilities a few extra rooms are to be provided. These, which can be singles with two beds are for the use of commuters who work late at school, dates of M.I.T. men on weekends, female parents and friends, and ill girls not requiring hospital facilities. These rooms should not prove to be uneconomical and should be in more or less constant use. A fee would be charged for their use.

There should be a number of rather small living rooms for entertaining guests and general lounging. They should not be of the cubicle variety, but should

insure a discreet amount of privacy. This living area should be available for house functions such as dances, teas, and meetings and therefore should be expandable in some manner. Somewhere on the first floor near these living rooms there should be space, acoustically, ^{treats,} for television viewing. The girls at the present dormitory do not seem to want a television set, but provision should be made for one. There should be another separate area for musical pursuits, with a piano and radio-phonograph. Many girls play instruments and almost all like to listen to music at one time or another. In addition there should be a men's room and powder room near the living rooms but unobtrusive, for the use of guests and students.

On either the first floor or in the basement there should be space for a few games - ping-pong, chess, checkers, etc. - which would be available to guests. Also, since the main purpose of the dormitory is to enhance education and study, an area should be allotted for use by both men and women students for joint homework endeavor. Since this would occur largely during weekdays and other periods when the living rooms are not at their peak load for entertaining guests, probably some of the living or dining room area can be used for this purpose.

Near the front door there should be a small office

where mail, packages, and messages may be received and delivered. No full time help is necessary here and an institutional feeling is to be avoided.

The dining room should be sufficient to accommodate all the undergraduate residents of the house plus an increase for guests, dates, parents, and graduate students who might want to eat here. Service will be by girls serving as waitresses; they will pick up food in the kitchen and bring it to the tables. It should be remembered, however, that when guests are most frequent, that is, on weekends, many of the residents may be dining elsewhere. Also this space can be used more economically if non-resident girls could eat their noontime meals here on some common basis. In general, small tables should be provided but a few large ones help cliques from forming at meals, which seems to be unavoidable. Noise should be kept at a minimum in the dining room and some acoustical treatment probably is necessary. This room can also be used effectively for small dances and receptions if desired.

The kitchen can be out of the general student circulation area, since it is expected that at least one full-time cook would be employed. It should have adjacent to it some form of dry storage room that can be ventilated easily and which is accessible at grade to a delivery entrance. Heavy and long-term storage can be provided in the basement with connecting stairway

and dumbwaiter or small elevator. Since the kitchen will be normally locked during off-hours some kitchenette space should be available to the lounge area for serving snacks to guests.

The housemother should have a suite of rooms at her disposal, at least consisting of a bedroom, living room, and bath. Its location should insure privacy and quiet, yet should be readily accessible by the students, without imparting a feeling of supervision. It should be fairly close to the front door, but access to it should not involve excessive traffic through the students' social areas.

A suite of rooms for a faculty resident has been considered and unless found to be completely impractical from a cost standpoint would be highly desirable. The function of a resident from the staff and his wife would remain as it is in the men's dormitories on campus, that is to act as an informal advisor. No managerial duties would be assumed by them. Their suite should consist of a living room, bedroom, kitchen, with facilities for study and quiet.

The students' rooms should be arranged so that as many of them as possible are drawn together without overcrowding. In general, some form of natural group should evolve from a purely physical arrangement, but it should never be allowed to keep out of contact with other groups, nor should students from one group be denied access to

another. Cliques should never be allowed to form; neither should any students be permitted to withdraw completely from any group. The object of this area should be to divide an unmanageable number of persons into flexible and fluid groups of a compatible size. Generally it seems that this group size varies from four to ten persons. The group must not be allowed to become overimportant, and all rooms should be equally accessible.

Closet space in the present dormitory seems to be inadequate and in the new building this should be very carefully designed to make the maximum use of the area. Women's storage requirements are quite different from those of men. Dressing space should be located, of sufficient size, near the closets. A vanity table and sink combination should be provided in each room so that it is not necessary to leave this room for make-up and light washing.

Some lounge space should be provided near the rooms where students may talk or read without disturbing roommates. This should be a common meeting ground encouraging interplay between as many persons as possible. It may be that part of this area could be used for special study area for a certain number of students; however, it seems that girls prefer studying in their bedrooms and perhaps sufficient study space should be provided there rather than outside of the privacy of the room.

A kitchenette for the use of the students at odd hours is very desirable. It should be efficient, small, and equipped with only enough facilities for a very small meal. It can be located in or near student lounge areas.

Bathrooms probably should serve as few persons as is possible. In general, showers should be provided, but a few tubs are desirable. The problem of keeping them clean seems to be less as far as girls are concerned. Privacy for girls using showers and toilets is of prime importance and a few sinks with paper towels nearby should be provided.

Somewhere in the residential area there should be space for mending clothes, sewing, and ironing. This area should be used in combination with storage space for bulky clothes used for only a portion of the year, such as evening gowns and coats.

There should be a laundry in the basement containing automatic washers, driers and plenty of indoor line space. This space should be capable of being kept very clean.

Also in the basement there should be an area for dead storage - trunks and cartons and suitcases. They should be easily available on racks. Seldom used household fixtures and maintenance items can be kept here as well.

Directly accessible at grade or slight ramp should be an area for perhaps 20-25 bicycles with racks and some space for minor repairs. Apparently more girls will ride bicycles if a dormitory is in Cambridge where less traffic is expected than in Boston.

The roof should be utilized to provide space for studying and sunbathing during the pleasant months of the school year. Privacy from outside view and consideration of sun and wind factors are of importance here.

The disposition of the dormitory during the summer months should be considered. If it is to be closed then, provisions should be made so that minimum maintenance is required. If only part of it is to be used, definite areas should be designated for that purpose.

Space should be provided for coat storage for guests near the main entrance as well as for house employees in the service areas. Some library space should be allotted to take care of books donated to the house and already collected, so that they may be used easily and as often as necessary.

Perhaps ten to fifteen girls might be expected to want to keep automobiles at school and the dormitory should strive to provide parking space for them. Institute policy in the future may limit this when parking problems become more acute than at present. A few

parking space should be provided for guests, however, regardless of student requirements.

The telephone complex in the men's dormitories is chaotic, involving three different systems, and little help is foreseen. Perhaps here connections can be made to the inter-dormitory system in each individual room, by which means the occupants can be informed of incoming calls to be received in hall booths. This would involve Institute as well as outside Bell telephone calls into the house. Outgoing calls would be made from key booths on each residential floor as well as the main floor.

THE SOLUTION

SITE

Only a few sites in Institute property west of Massachusetts Avenue, where M.I.T. wants all living groups to be located in the future, presented themselves for this dormitory. Land further east was not seriously considered because of lack of available locations and dirty, noisy conditions. Along Memorial Drive, there is a parking lot just east of the Sancta Maria Hospital, which would probably be of sufficient size to hold a women's dormitory. However, this is one of the most congested spots of the Massachusetts Avenue-Memorial Drive intersection and probably is land that frankly could be put to better use as a men's dormitory at some future date. It might be that some of the land behind this lot could be used thus making the women's building part of the auditorium-chapel group. Functionally, however, it might seem odd to place a purely residential building into an entirely social complex. The trend seems to be to keep all residential buildings at the western end of the campus as far as possible.

The parking lot just east of Burton House was considered for a short time but rejected because of the small size of the property and its rather cramped location

between a fraternity house and Burton House. West of the No. Six Club there is a rather fair-sized parcel of land presently occupied in part by the M.I.T. solar house. Beyond this point the Drive ceases to be a divided highway and noise becomes a real problem. The land now occupied by Howard Johnson's and the Smith House will revert to M.I.T. in seven years, but they were not considered seriously because of their distance from the main academic buildings, although M.I.T. will most certainly build there in the future.

Of the river sites presently occupied by buildings none were considered because of high investments, except these: the fraternities and private house next to the graduate house, rejected again because of noise and the desirability of retaining these fraternities on the Cambridge side of the Charles; the site now occupied by the Sancta Maria Hospital. M.I.T. hopes to own this land sometime within the near future, but the noise, combined with its extreme proximity to Baker House, make this a rather undesirable site. Of river locations the solar house lot seems to offer the most advantages, although it is fairly distant from school. The advantages of a river site, of course, are many: much sunshine, ability to catch summer breezes, and an impressive view. However, it must be remembered that noise from traffic on Memorial Drive is a problem and dirt from industrial

Cambridge always exists.

It has been understood that none of the land presently occupied by playing field is to be encroached upon, and in fact the land in Westgate east of the main street there is not to be built on, once Westgate is rebuilt, according to present plans. In theory, at least most of the remaining land in Westgate is available, since many proposed plans for future married student housing indicate that it will be placed as far to the west end of the campus as possible. One plan was to use this land as a fraternity row, since the Institute encourages the non-Cambridge houses to move here. However, it is expected that few will actually ever make the move, because of the prohibitive cost and also, no doubt, a desire to maintain a certain degree of individuality. Lacking a real concrete plan for the redevelopment of Westgate, it would seem foolish to arbitrarily locate a building here, recognizing, however, that many quite workable sites might some day be available. The same, of course, is true of Westgate West.

For these reasons the solar house site was selected. Its size may well allow for the future construction of a women's center in addition, which has been the dream of women connected with the Institute in all capacities; its possible location there should be considered, in addition.

DISPOSITION OF ELEMENTS

The main body of the building was located near the rear of the site as much as possible to keep noise from Memorial Drive to a minimum. In addition a view of playing fields will be afforded from the rear side of the lot once some of the land in Westgate has been reclaimed for this purpose. The building was placed close to the eastern end of the lot for easier access to school and to allow for future buildings, such as a proposed women's center.

The front part of the lot was conceived of as a landscaped garden, partially walled in, for relaxation during the fall and spring months when the weather is pleasant. Also winter games in the snow can be played there during the winter. Certainly it will enhance the view towards the river.

Two schemes were considered for the graduate student apartments. One provided for using the western end of the main building for this purpose. However, this entails the use of a stairway and entrance apart from the undergraduate section for privacy; graduate students should be able to entertain men in their apartments if desired. The need for a sharper differentiation was evident for the peace of mind of both graduate and undergraduate.

The second scheme involves a wing at right angles

in front of the eastern end of the dormitory for apartments using a common entryway to Fowler Street. Each apartment faces the garden and considerable privacy is achieved. This plan was finally adopted.

The corridors in the dormitory were offset so that the doubles could be placed on one side and singles on the other at one end of the building; the procedure is reversed at the other end so that both doubles and singles get the more desirable river orientation. The bathrooms are located in bays on the rear, releasing more rooms for the front.

The transition between the offset corridors is achieved by means of a lounge running through the building north and south. Here sitting space is provided for relaxation from studying. There is a kitchenette for snacks directly off it. Part of the third floor lounge in front has been removed so that a two-story lounge exists giving a huge view of the river and garden. Likewise, part of the second floor lounge has been removed in the rear to provide a balcony over the entry spaces below on the ground floor. A "grand staircase" connects these levels affording the girls an opportunity to display themselves to dates and guests while descending.

Other stairways are located at either end of the corridors in single-room bays -- one for a back exit to the laundry, bicycles and other service functions,

while the other is primarily for fire escape.

The first floor contains the lounge spaces, dining room and kitchen, and bicycle room. It is entered either from Amherst Alley or Fowler Street by means of a canopy which extends through the entire building and also connects to the graduate wing. The dining room and lounge are given views into the garden. Expansion is achieved by adding a third residential floor to the dormitory and another graduate wing at the western end of the garden.

ROOMS AND APARTMENTS

The rooms of the undergraduates were designed to give each student ample study space in conjunction with separate dressing, sleeping and sitting areas. Movable desks are located close to windows for maximum light. Beds are lightweight, easy to move around in different arrangements and can be used with cushions, as couches, during the day. Wardrobe closets are located along one lateral wall affording some acoustic isolation. A vanity table, incorporating a sink in it, is included near the closets. The offset corridor arrangement of rooms allows many future possibilities for change in plan should that be found necessary.

The graduate apartments consist of two rooms and a bath. The living room and entrance face the garden and the bedroom is behind it facing east. The bath is

in one corner of the apartment back-to-back with a kitchenette. The apartment has good cross-ventilation when the living room and bedroom can be opened to one large area.

STRUCTURE

The dormitory building is of reinforced concrete -- round columns supporting flat slabs. No drop panels or capitals are necessary since provision is made for pouring the slab around a rolled steel gridwork connected to the column, thus preventing the column from punching through the slab. The thickest column (in the center line of columns) is 16 inches, computed to include the weight of a fourth floor. Other columns, along the outside, are 12 inches in diameter. The thickness of the flat slab is 7 inches.

The exterior walls are set behind the columns so that complete freedom is allowed for future changes in the floor plan without disturbing the structure. The columns are exposed and covered with a fine grout for weatherproofing.

The partitions between the graduate apartments are bearing walls supporting the roof. The canopy over the entrances is supported by a line of small columns in line with the bearing walls. The roof is a 6-inch concrete slab.

ACOUSTICS

In the appendix are found calculations for checking "deadness" of rooms and applying materials of correct sound absorption. There are also computations involving noise reduction in the music room near the lounge spaces.

Sound transmission between rooms is a very critical factor where so many people live close together. A gentle roar from outside is not so annoying as hearing one's neighbor's radio. Concrete block plastered on both sides, provides a theoretical 46 db loss and should be sufficient for all but the noisiest neighbors.

Doors are perhaps the weakest of the room elements in terms of sound barriers and detailing should be to as close tolerance as possible. Without elaborate door stripping and setting the most satisfactory solution seems to be to enforce rules concerning excessive noise in the corridors. Certainly a carpet in the corridor would help in the noise involved in walking along.

Wherever holes are cut through concrete slabs for pipes it is important to fill the holes around the pipe so that no space is left open for free sound transmission. This is equally true of places where electric outlets are set into solid walls. Wherever the plaster on the concrete block has been pierced

it should be repaired quickly so that sound cannot leak through the rather porous block.

Above all, good sound isolation seems to depend upon good detailing and careful construction. Most complaints arising in dormitories along this line have been due to carelessness, provided proper materials have been specified.

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APPENDIX

ACOUSTICS

Reverberation in single rooms:

$$V = (8)(10)(13) = 1040 \text{ ft.}^3$$

T average should = 0.4 sec. (a) 500 cks. normal
speech range

$$T = \frac{0.049V}{a}$$

$$0.4 = \frac{0.049(1040)}{a}$$

$$a = \frac{0.049(1040)}{0.4} = \underline{127} \text{ Sabines of absorption}$$

'a' available in singles:

- (a) 512 cps (1) ceiling Kalite 103 A = (10)(13) = 132
on metal lath (130) (0.40) = 52.0
- (2) Plastered Aw = (2)(13)(8) = (208)(0.020)
on hollow tile = 412
- (3) End wall $A_{EW} = \frac{(8)(10) - (7 \times 2\frac{1}{2})}{(62.5)(0.020)} = 1.3$
- (4) Door $A_D = (7)(2\frac{1}{2}) = (17.5)(0.03) = 0.5$
- (5) Windows $A_{wi} = (10)(5) = (50)(0.027) = 1.3$
- (6) Below windows $A_{bw} = (10)(3) = (30)(0.020) = 0.6$
Plastered on hollow tile
-
- (7) Two people (2)(4) 8
- (8) Drapes $A_3 = (10)(4) = (4)(0.44) = 17.6$
- (9) Bed (assume = 3 upholstered chairs) 6.0
- (10) Chair 3.0
-

(11) Desk (assume same as 3 non-upholstered chairs)	0.7
(12) Desk Chair	0.3
(13) Wardrobe (assume same as 5 non-upholstered chairs)	1.2
(14) Bookcase (assume a =	2.0
(15) Corkboard A - (5)(3) = (15)(0.08)	1.2
(16) floor: rug (4)(6) = (24)(0.28)	6.7
(17) asphalt tile (130-24) = (106)(0.06)	<u>6.4</u>

113.0

Enough miscellaneous items around room to bring up to 127

Reverberation in Double Rooms:

$$V = (8)(13 \frac{1}{3})(18) = 1920 \text{ cu. ft.}$$

T = 0.4 sec. at 500 cps - normal speech range

$$a = \frac{(0.049)(1920)}{0.4} = \underline{235} \text{ sabins of absorption}$$

At 512 cpi

(1) Ceiling Kalite 103, on metal lath
 $A = (13)(18) = 234 \text{ sq. ft.}$
 $a = (234)(0.40) = 93.6 \text{ sabins}$

(2) Walls, plastered on concrete block
 $A = (2)(18)(8) = 288 \text{ sq. ft.}$
 $a = (288)(0.02) = 5.8 \text{ "}$

(3) End wall, same as (2)
 $A = (8)(13) - 17.5 = 86.5 \text{ sq. ft.}$
 $a = (86.5)(0.02) = 1.7$

(4) Door
 $A = 17.5$
 $a = (17.5)(0.03) = 0.5$

(5) Windows
 $A = (5)(13) = 65 \text{ sq. ft.}$
 $a = (65)(0.0027) = 1.8$

(6) Below windows same as (2)
 $A = (13)(3) = 39 \text{ sq. ft.}$
 $a = (39)(0.02) = 0.8$

(7) Two people		= 8.0 sabins
(8) Drapes (over windows)		
A = $(1/2)(8 \times 13) = 52$ sq. ft.		
a = $(52)(0.44)$		= 22.9
(9) Drapes (dividing room)		
A = $1/2(8 \times 3) = 12$ sq. feet.		
a = $(12)(0.44)$		= 22.9
(10) Beds (2)	a	= 12.0
(11) Upholstered chairs (2)	a	= 6.0
(12) Two desks	a	= 1.4
(13) Two desk chairs	a	= 0.6
(14) Wardrobe closet(2)	a	= 2.4
(15) Bookcase (2)	a	= 4.0
(16) corkboard (2)	a	= 2.4
(17) Rug		
A = $(8)(9) = 72$ sq. ft.		
a = $(72)(0.28)$		= 20.2
(18) Asphalt tile		
A = $(13)(18) = 234$ sq. ft.		
a = $(234)(0.06)$		= 9.7
		<u>219.7 sabins</u>
(19) Enough miscellaneous material around room to bring total up to <u>235</u> sabins.		

Sound transmission loss through windows ($\frac{1}{4}$ ") 30 db

" " " " concrete
block plastered 46 db

" " " " door
(1 $\frac{3}{4}$ " solid) 20 db

Dining Room:

$$V = 25 \times 35 \times 11 = 9620 \text{ cubic feet}$$

$$T = 0.65 \text{ sec. (from table)}$$

$$a = 600 \text{ sabins (from table) - use sabins}$$

$$a = \frac{V}{20T} = \frac{9620}{(20)(0.65)} = 740 \text{ sabins (from formula)}$$

Absorption units available:

8 tables

$$A = (2)(8)(3)(7) = 336 \text{ sq. ft.}$$

$$a = (336)(0.03) = 10.1 \text{ sabins}$$

64 semi upholstered chairs

$$a = (64)(25) = 160.0 \text{ "}$$

50 people

$$a = (4)(50) = 200.0$$

Open corridor

$$a = (5)(11)(1) = 55.0$$

Side brick wall

$$A = (35)(11) - 55 = 330 \text{ sq. ft}$$

$$a = (330)(0.031) = 10.5$$

Northend wall:

$$\text{brick: } A = (25)(4) = 100 \text{ sq. ft.}$$

$$a = (100)(0.031) = 3.1$$

$$\text{glass: } A = (25)(7) = 175 \text{ sq. ft.}$$

$$a = (175)(0.027) = 4.6$$

Southend wall:

$$A = (25)(11) = 275 \text{ sq. ft.}$$

$$a = (275)(0.027) = 7.4$$

Floor: asphalt tile

$$A = (25)(35) = 875 \text{ sq. ft.}$$

$$a = (875)(0.03) = 26.2$$

Tablecloths: (assume 2 sabins each)

$$a = (8)(2) = 16.0$$

Drapes: $(\frac{1}{4})(2)(11)(25) = 137 \text{ sq. ft.}$

$$a = (137)(0.44) = \underline{60.5}$$

553.4

Ceiling must supply only 47 sabins

$$\frac{47}{875} = 0.054$$

use plaster, lime, sand finish on metal lath.

Music Room $20 \times 15 \times 13 = 3050 \text{ ft}^3$

ideal $T_r = 0.6 \text{ sec.}$ at 512 cps only
absorption = 225 sabins (from table)

$$a = \frac{V}{20T} = \frac{3000}{12} = 250 \text{ sabins (from formula)}$$

- (1) Wood sheathing - pine
(4" tile)
 $A = 15 \times 10 = 150^1$
 $a = 150 \times 0.10 = 15$
- (2) (a) same as (1)
 $A = (20)(66) = 120^1$
 $a = (120)(0.10) = 12$

(b) glass (3/16")
 $A = (4)(20) = 80^1$
 $a = (80)(0.027) = 2$
- (3) same as (1)
 $A = 150$
 $a = (150)(0.10) = 15$
- (4) (a) same as (1)
 $A = (4)(20-3) = 68^1$
 $a = (68)(0.10) = 7$

(b) glass
 $A = (6)(17) = 102^1$
 $a = (102)(0.027) = 3$
- (5) glass
 $A = (10)(2) = 30^1$
 $a = (30)(0.027) = 1$
- (6) Carpet a/ft.² = 0.28
 $A = (10)(15) = 150^1$
 $a = (150)(0.28) = 42$
- (7) Asphalt Tile
(linoleum) $A = 150 \text{ ft}$
 $a = (0.03)(150) = 5$

- (8) Drapes
 $A = (1/2)(20)(10) = 100$
 $a = (0.00)(100) = 40$
- (9) Furniture
 (a) sofa (= 2 chairs)
 $a = (2)(3.0) = 6$
- (10) Persons (2)
 $a = (2)(4.2) = 8$

Total without ceiling 156

To be obtained from ceiling $\frac{225}{156}$
 $\frac{156}{69}$

$$A = (15)(20) = 300$$

$$a = \frac{69}{300} = 0.23$$

Use Kalite #104 plaster ($a = 0.24$) in entire ceiling

Transmission losses -- music room

$$\frac{I_1}{I_2} = \frac{a}{\frac{1}{T} A_1 + \frac{1}{T} A_2 + \dots} = \frac{a}{T}$$

$$N.R. = 10 \log_{10} \frac{a}{T}$$

$$a \equiv \underline{225 \text{ sabins}}$$

	A	T	TA
(1)	150	0.000005	.00075
(2) (a)	120	0.000005	.00060
(2) (b)	80	0.001	.08000
(3)	150	0.000005	.00075
(4) (a)	68	0.000005	.00034
(4) (b)	102	0.001	.10200
(5)	30	0.001	.03000
(6)	-	-	-
(7)	-	-	-
(8)	-	-	-
(9)	-	-	-
(10)	-	-	-
(11)	300	0.000008	.00240

$$T = 0.21684$$

$$N.R. = 10 \log_{10} \frac{225}{0.217} = 10 \log_{10} 1040 = (3.02) = 30.2 \text{ db}$$

Assume a maximum noise level of 65 db at street 70' away

65 - 30 = 35 - too much, reduce more

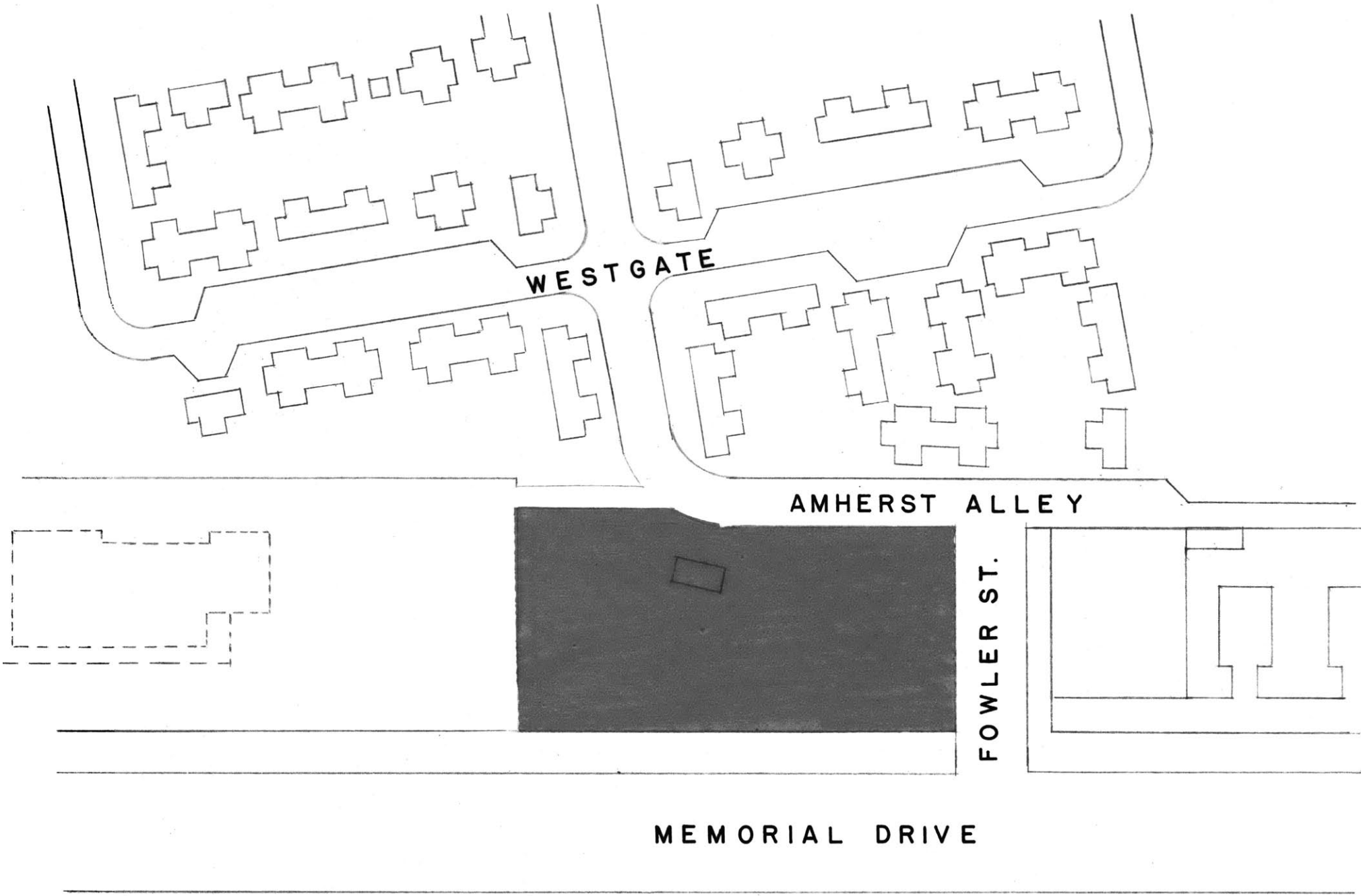
Eliminating all windows except door + 2 strips on outside
(with double $\frac{1}{2}$ " panes)

(2) all tile walls: 370 ft.	0.000005	0.00185
-40	0.0001	<u>0.00400</u>
		.00585

$$T = 0.2168 - 0.0806 - 0.1023 + 0.0058$$

$$T = 0.0397$$

$$N.R. = 10 \log_{10} = 10 \log_{10} 5680 = 37.5 \text{ db better}$$



March 9, 1955
Box 4
362 Memorial Drive
Cambridge 39, Mass.

Dear Tech Coed,

As subject for my bachelor's thesis in architecture I have selected this, A Women's Dormitory for MIT. In Preparing a program for this topic I need considerable information which is undoubtedly best provided by the women students themselves. Therefore, I would greatly appreciate it if you would fill out this questionnaire and return it in the enclosed envelope within the next few days. I cannot overemphasize the importance of your cooperation in this project; your reply will help determine the type of dormitory to be designed, which will, in turn, I hope, give some direction to the Institute's actual building program. Tentatively the proposed dormitory would be located on MIT property somewhere west of Massachusetts Avenue, as part of the Institute's development program of that part of the campus as a residential, recreational, and social area.

All replies will be reported in statistical form only; they need not be signed, and, of course will be confidential. If you feel that you can help me beyond the scope of this questionnaire, I'll be glad to talk to you anytime. You can reach me by leaving a note in the architecture department headquarters, Room 7-345, or by calling Baker House phone 292. Thank you very much.

Sincerely,

Richard Gardner

I. For those students not now living in the present dorm.

1. If there were space for you at a women's dorm would you live there? Yes 23 No 26 No Return 1
2. Would you want to live in the present dorm if it were closer to school? Yes 14 No 33 No return 2 Probably 1
3. Would you want to live in the present dorm if the rents were lower? Yes 18 No 29 No return 3
4. Have you applied for accommodations at the present dorm in the past and been turned down? Yes 22 No 28 No return 1
5. Do you now live a) at home? 20
b) in a cooperative house? 3
c) in a rooming house or apartment? 24
d) with friends? 1 Independent dorm 1
6. If you are commuting from home, do you often find it necessary to stay late at school, or even overnight?
Yes 28 No 9 No return 13

6. Would you prefer to
- a) cook in a communal graduate kitchen? 5
 - b) cook in a private kitchenette in each apartment? 15
 - c) eat with the undergraduates? 2
 - d) eat out? 1

IV. For all those interested in a new women's dormitory.

1. Would you prefer to live in a
 - a) single? 32
 - b) double? 29
 - c) triple? 3
 - d) quadruple? 0
2. Would you have any qualms about living close to a men's dormitory? Yes 3 No 53
3. Do you feel that individual mailboxes are desirable? Yes 37 No 15 Indifferent 6
4. a) Do you play a musical instrument to any degree of proficiency? Yes 26 No 31 NR 1
 b) Do you sing or play an instrument in any organized group? Yes 10 No 47 NR 1
 c) Would you use a music room occasionally if one were provided? Yes 49 No 7 NR 2
5. Do you have a
 - a) small 20
 - b) moderate 28
 - c) large 9 number of pieces of dead storage, i.e., trunks and suitcases?
6. Would you ever have occasion to invite a girl friend or female member of your family to stay overnight? Yes 50 No 7
7. Would you like to have a faculty member and his wife live in a private suite in the dorm? Yes 34 No 7 ? 2 Ind. 5 NR 1
8. Would you want a television set in the dorm, provided there were regulations concerning its use? Yes 33 No 22 NR 1
9. Would you keep an automobile at school if there were parking space? Yes 18 No 33 Maybe 4 NR 2
10. Would you want to keep a bicycle at the new dorm? Yes 21 No 32 NR 3
11. Do you prefer to study in a
 - a) your bedroom? 40
 - b) a special study room? 14 Either 3
12. Do you like to prepare occasional snacks? Yes 54 No 1
13. Have you been to the Institute's infirmary or other hospital facilities for overnight or longer during your college career? Yes 13 No 43 NR 1
14. Would you prefer to have largely
 - a) movable 42 NR 2
 - b) built-in 13 furniture
 in bedrooms or study rooms?
15. Would you like to see a women's dorm hold occasional house dances? Yes 47 No 6 Indifferent 1 NR 3

If you have any ideas concerning this project, please elaborate on the backs of these pages.