

## STATUS

The Committee on the Status of Women in Astronomy - American Astronomical Society

JANUARY 1989

## New Editors

*by Kathy DeGioia Eastwood*

This issue marks yet another change in editorial staff. Geoff Clayton of NASA HQ and I have agreed to edit the newsletter for a while, and since the newsletter is now the "official" mouthpiece of the CSWA, the content is approved by both the CSWA chairperson and the AAS executive office. My goals for the newsletter are to 1) increase the readership beyond women astronomers, 2) make it useful to both undergraduate students considering physics or astronomy as a field and graduate students already immersed in it, 3) provide concrete suggestions for increasing the percentage of women in science, and 4) make the newsletter financially self-sustaining. Any ideas for articles or suggestions on how to achieve these goals will be appreciated.

## Letters to the Editor

Dear Editor:

I attended my first AAS meeting at the end of my first semester of graduate school. When I saw the announcement for the CSWA meeting I thought it would be a wonderful chance to learn about all the opportunities available to me in astronomy. That meeting was in Pasadena in 1986. I am impressed that such a large group of women and men would gather for such a discussion, but I am disappointed at the attitude and direction of the group. I have found the few meetings that I have attended to basically be gripe sessions on how women are treated in the field. I feel that a more constructive goal for this group and this newsletter is to pass on information of opportunities available to women in astronomy and to encourage more women to pursue careers in astronomy, rather than concentrating on the difficulties involved.

I realize that there are many physics and/or astronomy departments in which there is discrimination against women students and faculty: however, the situation is not universal. I have been fortunate enough to have had a very encouraging and supportive experience at the University of New Mexico (UNM). There are several women graduate students in the astronomy program at UNM although the total percentage in the Department of Physics and Astronomy is small. Bel Campbell, who is now my advisor, was hired in January 1987 and is the first woman faculty member in the department: I believe they are hoping to hire more. Naturally, as in every crowd, there are one or two people without whom life might be a bit easier, but the vast majority of the faculty in my department are very fair. On my first day in the department I was approached by three faculty members, two astronomers and one physicist, who told me that if I ever had any problems with the faculty or other students, particularly of a sexist nature, I should tell them immediately. I have never had to take them up on their offer, but I am convinced that each of them would take the necessary action to put a stop to inappropriate behavior, and that they would have the full support of the department head.

In having a female faculty member, the women graduate students here have an in-house role model and the chance to see how we can expect to be treated. Fortunately for everyone involved, it appears that Bel is treated quite fairly within the department and has gained respect in the field based upon her research. Bel is a good friend and advisor. However, I chose to work with her because she is working in a field that interests me, and because she has time and funding available. I don't think any of the women in the department rely on Bel as an escape from the male faculty members.

I have also worked on projects with men in the department without feeling harassed, ignored, or cheated in any way. In fact I was given opportunities for travel and visibility on a project that my male counterparts were denied, because I had gotten further along on my segment of the project. In addition to my work at UNM, I have been a graduate research student at Los Alamos and am

currently a visiting scientist at the National Center for Supercomputing Applications. In both cases I have never felt that I was treated differently than if I were a man.

I think it is important that positive situations like this be represented fairly in discussions of how women are treated in astronomy. They can act as role models for less progressive departments to follow, and as encouragement to women considering astronomy as a career. Women make up an increasingly large pan of the scientific community. If highly qualified women begin to accumulate in certain institutions while avoiding others, the male-dominated institutions may start to realize that they are losing out.

Jordis Asbell-Clarke  
University of New Mexico

Dear Jordis:

I am glad that you have written, simply because I have heard your sentiments expressed by several other women since I was talked into this editorial job in June. The opinions of women astronomers and physicists seem to be, if not polarized, divided along a continuum of sons. Their opinions seem to depend on how they have been treated in their careers and on their personalities. There are those who wish to discuss how they have been discriminated against and how to deal with that discrimination, those who prefer to concentrate on how to increase the proportion of women in science, and of course those inbetween. While I personally think that this newsletter is an appropriate medium in which to tackle the second problem, I welcome suggestions on what the readership wishes to see. Readers, please write.

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## **Women Worldwide in Astronomy**

*by Deidre Hunter, Lowell Observatory, and Vera Rubin, DTM, Carnegie Institute of Washington*

A special session on "Women Worldwide in Astronomy" was held at the XX General Assembly of the IAU on 8 August 1988. The purpose of the meeting, which was attended by about 200 women and men, was to focus attention on the problems that women astronomers face throughout the world. The goal was to gain an international perspective and to compare the problems women face in different countries. The program consisted of 7 speakers from 6 countries who talked about the problems and statistics particular to their country or region, followed by a discussion from the audience. The speakers were V. Abalakin (for A. Masevich, U.S.S.R.), E. Athanassoula (France), J. Bergeron (France), C. Hanagan (South Africa), V. Krishan (India), S. Torres-Peimben (Mexico), and S.-H. Ye (P.R. China). The discussion moderator was M. Burbidge (U.S.A.). The

organizing committee consisted of V. Rubin (LOC, U.S.A.), E. Athanassoula, D. Hunter (U.S.A.), S.-X. Li (P.R. China), A. Masevich, and S. Torres-Peimbert. A summary of the discussion follows.

The percentages of astronomers who are women varies from country to country but they are generally low. Among the staff working in astronomy in China one-third are women. However, at the higher levels less than 10% are women. In India although women have historically played a role in other fields like writing, in astronomy there have been few women. Of 20 Ph.D. astronomers in South Africa one is a woman and there are two women graduate students. In Japan there are 600 astronomers and graduate students. Of these there are only 4 women with Ph.D. 's, of which 2 have permanent positions, and 10 graduate students. In Scandinavia there is one female astronomer with a full-time, permanent job. There are more female astronomers, but they either have no jobs or are employed part-time. On the other hand, 20 of 50 astronomers in Egypt are women.

In the U.S.A. historically women have made up a small but important component of astronomers who have been responsible for a number of fundamental discoveries. However, these women did their work despite overt discrimination against women in science. Until several decades ago regular astronomical positions were open only to men, and women were prohibited from using the Mt. Wilson and Palomar telescopes. Today discrimination is not as overt, but women still represent only 8% of the astronomers in the U.S.A. and are even more under-represented in senior positions.

France, on the other hand, has a very high percentage of astronomers who are women, about 30%. There are several reasons for this. First, historically universities in France have always been open to women at all levels. The universities became somewhat closed to women in the 15th century, but in the 20th century France was one of the few places that a woman could get a Ph.D. in physics. In other countries there is not such a tradition. In the U.S.S.R., for example, it was only after the revolution that women were admitted to universities. A second factor aiding women astronomers in France is that academic positions are tied to the person rather than to a specific place. This makes it easier for a couple to combine two careers and still live in the same place. Finally, child care is very good and easy to obtain. Children of working women can stay longer at school; and, since the majority of women work, there is no stigma on the child who must stay longer. In many other countries child care is not as easy to obtain, and the woman with a career is expected to do double duty. Nevertheless, even in France there are problems. The percentage of women in astronomy has been declining recently, and the percentage of women in senior-level positions is lower than that overall in astronomy. As the salary-class goes up, the percentage of women decreases.

Women who do become astronomers find that they must work against prejudices. Work by women is often rated lower than that by men. Today women may get jobs in the physical sciences that would have been denied them in the past, but they may not get fair access to laboratory space and equipment and may be promoted more slowly than men. In India until recently women were not allowed to observe at night. Men are preferred in hiring and advanced faster, and women must endure an atmosphere in which they receive very little respect. In Mexico discrimination is not overt, but there is again a reluctance by men to appoint women to jobs with responsibility. A survey of papers and salaries of women astronomers in Latin and South American countries showed that women publish as much as men but for lower salaries.

Prejudices within society also work to prevent women from becoming astronomers and make it harder if they do. In Mexico the expectations for women are different, and discrimination is evidenced in education, games, and responsibility at school and at home. Professionally women have the problem of not being able to interrupt their careers to have children. In India women often disappear from astronomy after getting their Ph.D. 's because the social pressure to marry is very high. Many marry other scientists and then have the trouble of finding two jobs in one location.

In South Africa social pressures are probably largely responsible for discouraging women from going into science. First, women are regarded as secondary employees because women's primary

function is considered to be caring for a family. The view that women belong in the home is reinforced through advertising and legislation. For example, there is no maternity leave. Second, sciences such as physics and engineering are considered to be "men's jobs." In addition, a shortage of science teachers and a lack of female role models discourages girls from following science careers.

Slowly the situation is changing; one can find distinguished women astronomers at higher-ranking positions. Acceptance of women on an equal footing, however, will come slowly as more and more young women enter the field. The entrenched, and often unconscious, prejudices that women face now will erode only if the task is tackled from the beginning at the educational level. To change the situation women should promote science among young girls through their own visibility.

In summary, women worldwide in astronomy face many common problems and situations: 1) The percentages of women in astronomy are generally low, and those of women in senior-level positions are even lower. The numbers are not changing very rapidly. 2) The discrimination today is primarily subtle rather than overt as it has been in the past. Women are not prohibited from using telescopes as they once were, but they still face discrimination in the form of attitudes. 3) Women generally work in atmospheres in which they are not taken seriously, not given responsibility, and not recognized as readily as men for their contributions. 4) Married couples in which both husband and wife have careers have difficulty finding jobs for both in the same location. Often the woman bears the primary burden of juggling family and career. 5) Finally, the prejudices of society are perpetuated through the educational system and peer pressure. If the situation is to be changed, little girls must learn that they too can be scientists.

## **Chairperson's Corner**

*by Lee Anne Willson*

One thing that happens to a person who is appointed chair of the CSWA: (S)he becomes an instant expert on the status of women - at least, judging from the questions I have been asked. Some of the probably related, though independently asked, questions and statements that have been directed my way over the past few months include:

(Older male colleague): "Isn't it true that the women who experience discrimination bring it on themselves by being obnoxious?"

(Young female scientist): "Why is it that successful older women scientists don't seem to notice the discriminatory acts and put -downs they and the rest of the women are subjected to?"

(Older male colleague): "Since you have succeeded in a previously male dominated department/profession, you are obviously (by definition) a feminist. (Are all token women feminists?)"

These all seem to deal in one form or another with the personality and experiences of the "token women" who have been successful in achieving positions of responsibility and respect in, for example, physics and astronomy.

Consider the question posed by the young woman: Why don't the successful women seem sensitive to the negative treatment they are accorded? Could it be that sensitivity - allowing oneself to be irritated and made angry by the insensitivity of some of one's colleagues - is a factor that makes it harder to succeed? I can think of several ways in which it works against women when they notice and become overtly angry about irritating attitudes:

(1) Anger takes energy away from science.

Certainly, on those occasions when I have been angry about the unfair treatment I felt I was receiving, the most obvious consequence was that I became less able to concentrate on my work. One of the advantages of having close colleagues who notice the same sexist comments/attitudes (usually, but not only, other female colleagues) is that one can vent one's irritation through humor and shared indignation rather than by steaming quietly alone.

(2) Angry people get less support from their colleagues.

We can probably all think of examples of people with "chips on their shoulders" who are ready to assume the worst motives and who, as a result, often experience just what they expect. It is difficult to deal fairly with someone who assumes that (s)he is being unfairly treated. For myself, I have found it practical to assume that people's motives are good, whatever their actions; it increases the odds that my response to them will produce the result I want and doesn't do too much harm if I am wrong.

(3) Angry people quit.

A person who is sane has options, and when that person finds her/himself in a situation where discrimination makes it hard or impossible to succeed, (s)he will select another option. (Is persistence in the face of injustice a form of insanity?) How much of a factor is this in the attrition rate of women between the B.Sc. and the Ph.D. in physics and astronomy? It would be interesting to try to find out.

Taking as a working hypothesis that graduate school and the first few years of professional employment will tend to weed out those who are most sensitive to the intentional and unintentional sexism of a male-dominated profession, we would expect that the successful senior women would be those who are able and willing to ignore at least the most frequent and minor annoyances. What then impresses me is how many of the senior women are in fact very aware of the attitudes that work against women in professions populated mainly by men. The important distinction here is probably that between being sensitive to - i.e. irritated by - the frequent minor annoyances, and being aware of, but not threatened by, the irrationality of one's fellow humans. The successful women I know are aware, but not too sensitive.

At this point we have a partial answer also to the senior colleague's question: Is it only obnoxious women who experience discrimination? No - but they are perhaps less likely to transcend it. Being angry can be distracting, and it interferes with forming alliances with potentially sympathetic colleagues that could defeat the opposition. It is a positive survival trait to be able to deal with other's irrational behavior (and all prejudice is inherently irrational) rationally.

Back to the question posed by the young woman: Could your perception of the insensitivity of your senior women colleagues be the result of the following sequence of responses? You come storming in, angry about something irritating and wrong but not of major practical importance (a "said" rather than a "did" or "didn't"); your senior colleague is aware that this response will not serve you well, so she attempts to calm you down by pointing out that it really isn't the most important issue to choose for confrontation; you interpret her response as saying that your anger was invalid, when what she meant was "choose to do battle only for the most important issues, or run out of resources before you get to the important things!"

Are token women all feminists? Are token women all insensitive to the needs of younger women? A curious juxtaposition of assumptions concerning the motivation, backgrounds and personalities of those women who succeed in unconventional places. Clearly, if by feminist we mean someone who believes it should be possible for anyone to succeed at whatever (s)he has the ability to do and works for, then token women are feminists. If by feminist we mean someone who is

constantly aware of and in outspoken opposition to the subtle forms of discrimination that are pervasive in our society, then I suspect that the requirements for professional scientific success make it particularly hard for feminists to succeed.

## **Can You Solve These Problems?**

*by Carole Ferlazzo, Center for Excellence in Education, Northern Arizona University*

*-At a typical American middle school, equal numbers of boys and girls are enrolled in science courses. As these young women and men progress through high school, the attrition rate for the young women increases, until by senior year physics 150 boys and 46 girls are enrolled. What is the ratio of boys to girls in senior physics?*

*-Jane, a high school senior in 1988, can expect to spend at least 25 years of her adult life in the workforce. It is likely that she will enter one of the traditionally female job categories and can therefore expect to earn \$0.64 for every \$1.00 earned by a man. If she and Dick, an astronomer earning \$30,000/year, each work for 30 years, how much more is Dick's labor worth than Jane's?*

We easily compute that for every girl taking high school physics there are three boys, and that Dick will earn over a quarter of a million dollars more than Jane. Our calculations are made even more interesting by the fact that research clearly indicates girls and boys begin their formal educations with approximately equal competence and interest in math and science. Yet, as young women advance through school, and math and science courses become optional, the attrition rate for girls far exceeds that for boys. Thus, although girls may outnumber boys in advanced eighth grade math, nationwide studies show that by the twelfth grade twice as many boys as girls are enrolled in calculus. Consequently, far fewer young women than young men are prepared to take the math sequence necessary for such college majors as physics, architecture, mathematics, engineering, or computer science, and are thus dramatically under-represented in most math and science based fields.

New Frontiers, an agency funded by the Arizona Department of Education/Vocational Education, offers several practical ways to help solve the problem of the high attrition rate of young women in math and science courses and its result of limited career options in higher paying math-science occupations.

**EXPANDING YOUR HORIZONS:** "Expanding Your Horizons in Math and Science" conferences were held at 60 sites in fifteen states during 1987. Co-hosted by the Math/Science Network, these conferences for junior and senior high school young women encourage their participation in nontraditional careers. During these daylong conferences, students meet women working in nontraditional math-science based fields, learn about the preparation necessary to enter these fields, and participate in "hands-on" math and science workshops. For more information, contact Joy Wallace at the Math/Science Network, 2727 College Avenue, Berkeley, CA 94705.

**FAMILY MATH/MANIPULATING MATH:** These programs help teachers, students, and parents rediscover the fun and excitement of math while learning important problem-solving skills using a wide variety of math manipulatives. Minorities and women in math-based careers are invited to speak at these workshops to encourage the participants to take courses in algebra, geometry, trigonometry and calculus in order to prepare for interesting and financially rewarding careers.

**U-2 CAN COMPUTE:** These week-long workshops raise young women's computer confidence by having participants design and build projects using computer assisted programs. Women who use computers as part of their jobs are invited to address the participants, tell them about their careers, and encourage the participants to become skilled in computer use.

An important component of each of the three programs briefly described above are women role models who describe their nontraditional work. Because young people receive most of their career

information from television, movies, and magazines, their knowledge of the working world is limited to the glamorous or traditional occupations portrayed in the media, or the work their parents do. Consequently, young women frequently perceive very limited choices for future careers. The women role models in "Expanding Your Horizons," Family Math, and U-2 Can Compute provide valuable information, insight into the world of work, and an opportunity for young women to learn about occupations other than those to which they are normally exposed. These role models, as they advise, support, and encourage future generations of women astronomers, physicists and engineers are, as much as any other factor, solving the problems noted above.

**Editor's note:** Ms. Ferlazzo is an Equity Specialist with the New Frontiers Agency. I had the opportunity to present a workshop at her Expanding Your Horizons conference last spring, as well as at a program she held for minorities last summer. My experience was enjoyable and seems to be an efficient use of my time (much more so than attending meetings of the Faculty Women's Association, which seems relatively useless and has thus been dropped from my schedule book). Another way in which I was recently able to help Ms. Ferlazzo was to recruit women undergraduate students out of my classes to participate in panels at the upcoming EYH conference this spring. I was pleased and surprised at how willing virtually every student was to help out. We are very lucky to have someone of Carole's energy and enthusiasm, but I am sure that there are others like her at many institutions.

## **Arranging Child Care for Professional Meetings**

*by Barbara Anthony-Twarog, University of Kansas*

I'm not sure whether there is any official statement of policy for the American Astronomical Society regarding child care at meetings; in a way I hope there is not, because it would imply that virtually all organizers in recent years have spontaneously arrived at the obvious conclusion that arranging child care is one of several necessary burdens for the local organizers.

The demographic realities of our profession are that women astronomers are very likely to be married to other astronomers or physicists; this is reflected by my observation that most patrons of child care at recent meetings were two attending parents rather than single parents. While at no recent meeting that I know of have there been many children to care for, that really isn't the point - if you are a parent with a child in tow, attendance at professional meetings is absolutely impossible without some help, and trading off with a spouse is a fairly lousy solution.

As a patron of such services at several recent AAS meetings, I hoped to be able to subcontract some of the children to a local day-care center. For the June AAS meeting in Kansas City, we were lucky to connect with the local university-based center, where enrollments were down for summer vacation, that took care of children from age two to twelve. This was so efficiently down-loaded on the UMKC day-care operation that I actually don't know how many children were cared for there!

Babies present a slightly different problem and accounted for more of my headaches. My general plan was to employ a room at the hotel and hire shifts of babysitters. We secured a minimal amount of information before the meeting for each child, as well as the obvious signed releases for emergency care and responsibility. I stocked this room from our private hold of toys, munchies, drinking cups and diapering paraphernalia. What made this operation difficult in our case was having a meeting site in a city 45 minutes from our home and reservoir of babysitters, and at a hotel where food and parking were expensive. We tried to pay our sitters a fair hourly rate, which is truthfully more than one can ask per child per hour.

Setting up child care for a meeting in this fashion is not terribly difficult or costly, but should probably be overseen by someone not also running the registration desk! (Although my brief trips up

to the babies room were a nice break.) I owe a great deal to our sitters, and the organizers in Vancouver and Ames for their example and for their contributions to my enjoyment of their meetings.

## **Taking Advantage of Opportunities for Women: Financial Aid Programs**

*by Jordis Asbell-Clarke, University of New Mexico*

There are several financial aid programs available to women pursuing a degree in science. I am on a government fellowship for minorities. It just so happens that women in my department are a minority, and therefore I qualify. Below I list a few examples of fellowships available for women at the graduate degree level in astronomy and also a list of references for more information.

### **Patricia Harris Roberts Fellowship**

Available for minority graduate students within a department based on financial need. Stipend up to \$12,000/year in addition to tuition, books and supplies, and some travel or research funds. Duration is up to 3 years for Ph.D. and 2 years for a Master's degree, but financial need is assessed each year. Can be supplemented with moderate income from partial TA or RA. For U.S. citizens only.

### **Amelia Earhart Fellowship**

For women only. No citizenship requirements. For graduate studies in aerospace related fields including astronomy and astrophysics. Based on outstanding character and scholastic achievement. Stipend \$6000/year. Duration of one year but renewable. Approximately 30 awards given per year based on quantity of acceptable candidates. For more information:

Zonta International  
35 East Wacker Dr., Suite 2040  
Chicago, IL 60601  
(312) 346-1445

### **National Center for Atmospheric Research (NCAR) Fellowship**

Women and minorities encouraged. For graduate studies in fields including astronomy. Based on joint project between student's university and NCAR. Geared primarily for students who have finished classes and are working on a thesis project. Stipend about \$10,000/year depending on whether or not the students has passed the comprehensive exams yet. Funding for some travel to and from NCAR. Approximately 10 awards per year.

### **References**

-Directory of Financial Aids for Women, by Gail Ann Schlachter. Los Angeles: Reference Service Press. Annual. \$37.50. (I gathered most of the information on fellowships from this directory and it can be found in the women's center at most universities.)

-Financial Aid for Minorities in Science, Ed. by Ruth N. Swann and Sharon F. White, 1980. Garrett Park, Maryland: Garrett Park Press. \$2.00.

-Higher Education Opportunities for Minorities and Women...Annotated Selections. Annual. Washington D.C.: Government Printing Office. \$5.50.

-Financial Aid: A partial list of Resources for Women, prepared by the Project of Status and Education of Women, 1984. Washington D.C. \$2.50.

Editor's Note: I consider information about funding possibilities as one of the most useful things this newsletter can provide. Please send me information about funding sources of which you have heard or used. I will try and keep a list of these sources and publish reminders at the appropriate times to meet particular deadlines.

## Dear Andromeda

*According to some sources, Andromeda, (also called the "chained woman"), is the Greek name for the biblical "ABIGAIL." (of "Star Names and their Meanings" by R.H. Allen, Stechert, New York, 1899.)*

Dear Andromeda:

Affirmative action pressures are so strong at most universities that any women who are judged to be "productive, capable and creative" by objective standards are snatched up immediately. We made an offer to such a woman for a position at our university but she turned us down. There are simply not enough qualified women to fill all the available positions.

Sincerely,  
An EXchair

Dear Professor EXchair:

I have heard your complaint frequently from many senior astronomers in administrative positions. Indeed, women in senior administrative positions often voice the same complaint: "There are not enough qualified women." However, there is at least one set of statistics which counters this perception. As noted in the first edition of "STATUS," roughly 10 to 13 % of the astronomy Ph.D. 's granted each year go to women but only 2 to 5 % of the academic appointments are held by women. Either there is a lower standard for granting Ph.D. 's to women or, for some reason, the selection process for these positions is not applied uniformly to men and women. Indeed, MY perception is the following: Every year there is one woman who is in great demand by all the universities which are seeking new faculty. There are also usually only two or three men who are actively "wooed" by the more "elite" universities. As best I can determine from the rumor mill, MOST universities (elite and non-elite) then make an offer to the chosen woman for that year. When their bids fail (she can only go one place), the elite universities bid for the top men and the non-elite universities put out an offer to men who are lower on the list of eligible applicants. The result of this selection process can be examined, even if the process itself cannot. In private conversation, one often hears statements like "WE made an offer to Ms. Best Choice but SHE turned us down for Lots of Research Facilities U." One then looks at just who WAS hired by the speaker's university after their sad rejection, and finds it is a male who cannot hold a candle to Ms. Choice. NEVER do you hear the same people indignantly lamenting the fact that MR. BEST CHOICE turned them down. Usually, they would never have dared ask him in the first place and if they did, they would have been too embarrassed at their "rejection" to admit it. MY conclusion from all this scuttlebut is that women must be better than men to be chosen for the same position. There is an interesting study that could be done to test this conclusion objectively. Astronomers could be asked to rank ALL of the academic, "tenure-stream" personnel in the "top 20" astronomy graduate schools according to their "perceived" qualities (originality, creativity, etc). MY guess is that this would place MOST of the women in the top 50% of the male astronomers in their institutions. That is to say, I perceive those women who ARE hired into academic positions as being "above average" relative to their coworkers. I think what administrators mean is that there is really a shortage of women who are MORE creative, MORE productive, and MORE capable than their male counterparts. Either that, or the standards for hiring

men are just not stringent enough!

## **Andromeda Moves to Bitnet**

Some of what "Andromeda" writes has become too radical for STATUS. Also, Andromeda NEEDS FEEDBACK. To continue the more irreverent aspects of this dialogue and facilitate feedback, Andromeda has a bitnet address: ANDROM@MSUPA.bitnet. If you send in your EMAIL address, you will receive a copy of a non-sedate, Andromeda column from time to time. If you send in letters, I will try to use them, either in a STATUS column or in the bitnet mode. Please note: all letters will be used without names but will be checked with the authors first for accuracy. Written letters may be sent to:

Andromeda

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