THE BUR

Volume 5, No. 2 | Newsletter of the New York State Chapter of the American Chestnut Foundation, Inc. | Fall/Winter 1995

PRESIDENT'S MESSAGE

5 YEARS OF PROGRESS

Five hundred and fourteen members strong and a goal of 650 members by the 1996 Annual Meeting is real progress. A commitment to raise $125,000 to fund E.S.F. Syracuse Genetic Program to get a blight free tree which is 68% funded at present is real progress.

The continuing development of lesson plans and video for our education program in schools and nature centers will be finalized by September 1996. This will require all the effort Charlie Chestnut, Ginny Gene, and Buster Blight can put forth to raise the funds necessary to see this program become a reality. Once again real progress.

Finally, the extraordinary headway at E.S.F. Syracuse on the genetic program allows us to now target the year 2000 as our new goal for the blight free tree and use our original goal of the year 2004 as a fall back position should some unforeseen circumstances arise.

Thank you one and all for making this report possible.

Long live the American Chestnut
Herbert F. Darling, Jr.
President ACFNY

SCIENCE PROGRAM, PAST AND FUTURE

ACFNY's long ranee plan calls for restoration of the American chestnut tree (Castanea dentata) in three phases. Phase I is the current twin efforts in the laboratory and in the seed orchards.

Genetic research has been supported by ACFNY with seed money for grants at the College of Environmental Science and Forestry at Syracuse, NY (CESF) since 1990. There are 22 monitored seed orchards of identified American chestnuts in the state as of 1995 planted by members and recorded in a database with more being developed. We begin to see the completion of Phase I in a few years, although CESF will be continuing to refine the protocols and guide the field evaluation of seedlings.

Phase II is when ACFNY helps agencies and companies build large seed orchards. These will provide seed for the huge forests of the restoration, which is Phase III. We lost billions of trees; these agencies will, need millions of nuts to plant, every year. Our plantations, pollinated by the resistant pollen when it has been achieved, will help to provide these nuts with the assistance of ACF members.

Once we have a resistant tree, interest and support will grow. Many interests will want to take over production of these main phases.

We started on Phase II in 1994 when President Herb Darling asked for a meeting with Albany officials of the DEC. They responded with increased support and publicity and appointed a liaison officer, Mr. Wayne Cooper of Region IX, to follow our work. This fall he will receive some of the nuts our members harvested to plant in DEC orchards.

In addition, our second Harvest Exchange was held at the 1995 Annual Meeting where harvesters from all over the state brought 4,600 nuts in to be identified and planters received a selection of parental lines as the state harvest was distributed to the seed orchards. This is designed to ensure variability and adaptability and preserve the northern gene pool in New York State.

We are also doing Phase JII work. To breed champion stock in Phases II & III requires scientific control. We are building that control into our stock now, maintaining maps and computer records and live specimens where possible so breeders can use our data immediately. They won't have to start over by raising specimens to explore the genome of each line - and waste decades doing it. They can quickly select for traits that make champion trees - trees like the ones pictured in our brochure.

Good breeding starts with specifications. Both our principal scientists at CESF, Dr. William Powell and Dr. Charles Maynard and Dr. Al Ellingboe, ACF's Science chairman, have called for them. ACFNY's present list of traits includes timber form, vigor, cold-hardiness, coppicing, bloom time, nut size and flavor, tolerance for many soils, resistance to insects, infections and droughts. More suggestions would be helpful.

Two of the approaches to developing a blight resistant American chestnut are genetic engineering and the backcrossing method.

In the genetic research program, genes from frog tissue, snail tissue and the amaranth have been developed at CESF which have proven to kill the blight in vitro. Transformation trials are proceeding with these various genes with tests for expression to follow.

With ACFNY assistance a posi-doctoral associate is concentrating on accelerating the Pert Plan to reach the goal of a resistant tree. There is an exciting target time, but some puzzles in research take longer to unravel than expected and this makes a definite date impossible to predict.

The back crossing program is progressing well at the ACF farm in Virginia. They have good evidence that the premise of Dr. Charles Burnham was right: resistance gained from the Chinese chestnut is controlled by two genes, simply inherited. They are doing mapping to facilitate selection of the most resistant genomes. ACFNY supports this effort also.

A very hopeful future for the American chestnut seems in view, thanks to the support of our members and their work in the field. You can feel proud of being part of the program.

DISTRICT NEWS

DISTRICT 2 ... Margaret Collins (Home: 718-445-6436)

The District covers New York City.

District 2 has initiated a joint program with the City Parks Foundation (CPF) and the NYC Department of Parks. Chestnut seeds and seedlings will be grown for thi-ee years In the Native Plant. Center on Staten Island and the Bronx nurseries at Van Cortlandt Park as apart of the CPF's Urban Forest Education Program (UFEP). Approximately 700 *(70%)* of the first years seeds have survived and when the seedlings are hardy enough they will be planted in NYC parks. Margaret has been working with the NYC Park Commissioner Stern's office to have a publicity event to kick-off the ongoing planting program. The District appreciates the effort of Tony Emmerich of CPF and Jim Rossi, former Sraten Island Greenbelt Administrator, for helping to set up the new program. In Staten Island there was hands-on-help from Carl Mohlenhoff, and Catherine Del Tufo and Tim Williams of UFEP. In Van Cortlandt Park seedlings were grown with the help of Phil Seifert and Jeff Speich. The program is continuing under the auspices of CPF and new acting Greenbelt Administrator, Cathy Nutt.

Mary Leou of CPF is working with District 11 to develop educational programs with NYC Schools and Parks. Aileen Euler of the Alley Pond Environmental Center will devote an evening to American chestnuts as part of an ongoing Guest Lecture's forum.

John Graham of the DEC is helping to coordinate a Chestnut Arbor Day in 1996.

Future initiatives include the possibility of **a** film documentary recording memories of New Yorkers of local chestnut trees, the investigation into the feasibility of an ACF page in World Wide Web, and joint planting-publicity events with District I and III.

Margaret is actively soliciting help and ideas from New York City members. Phone her!

DISTRICT 3 ... Frank Munzer [Home: 516-232-1566)

Counties of Duchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester. The District exhibitec! at an Earth Day Fair in Westchester which 10,000 persons attended and at the Duchess County Farm and Home Center. The slide program was presented to the Annual Meeting of the Consulting Foresters in District **3** and another is booked for this spring at the Orange and Duchess Chapter of the Garden Club of America's Annual Meeting. Frank authored an article for the July issue of The Rotarian titled "The Survival of the Chestnut Tree". Ted Kozlowski held a seminar at Lasdon Park on American chestnuts with Sandy Anagnostakis as guest speaker. Craig Hibbin and Ted added 59 more seedlings to the Lasdon Park plantation bringing the count to 323. The other existing plantation was also expanded using seed sprouts planted by members. Four additional planting sites are planned in cooperation with the New York DEC. The District has filed a number of grants in 1995 with results to date of one for *$500.00* from the Readers Digest Foundation, the second grant from this source.

DISTRICT 5 ... Adrien Gaudreau (Home: 518-882-9424)

District includes counties of Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington. Adrien has investigated several leads and has identified a pair of American chestnut trees at Silver Bay. Unfortunately they had no burs this fall but will be observed through the 1996 season. He also is following up other leads supplied by DEC foresters. Adrien would appreciate a phone call from members in his District who can give him a hand in identification and planning for the future.

DISTRICT 6 ... T. Urling Walker (Home: 815-782-6328)

Counties of Jefferson, Herkimer, Lewis, Oneida and St. Lawrence. An inventory of American chestnut trees in the District is being gathered with the help of DEC foresters but delayed because of a Micro Blast which came across Lake Ontario with such severe damage that foresters have beer, exceptionally busy. Volunteers from the District may be needed to help move the 50 American chesmut trees from the Lowville Forester station to a less weather-severe location this coming spring. (Those members wishing to help please call Urling). Four or five trees from Lowville were transplanted to the Thompson Park Conservancy and, if they survive, will be highlighted with signage to help build an awareness of the American chestnut's plight. Presently the city of Watertown is working with community groups to develop a program for beautification, part of which will be the establishment of nurseries which would include rare trees such as the American chesmut.

DISTRICT 7 ... Roy Hopke (Home: 607-648-5512)

Counties of Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga and Tompkins. An organizational infrastructure has been established with the appointment of a Secretary, Treasurer/Fund Raiser and Record Keeper/Coordinator. After the November 5 planting there are 270 trees in the Rogers Environmental Center plantation. These represent 26 different families. Another plantation was established at the SUNY College of Environmental Science's Heiberg Forest. This will provide a captive and diverse population of American chestnuts for a variety of research projects at the College. Trees in the District 7 plantation have had a very good response to a fertilizer program of 1/2 cup of 6:6:6 in the spring. Also direct planting of sprouted nuts in the spring has given a survival rate of about 2/3, probably as good as those grown to seedlings in protected locations before transfer to their final planting site.

DISTRICT 9 ... Bill Snyder (Home: 716-839-5456)

Counties of Allegany, Cattaraugus, Chautaugua, Erie, Niagara and Wyoming. The April Planting Day in the DEC Zoar Valley plantation involved 86 people including school children. Wayne Cooper and Mike Fay of the DEC set the planting rows and joined with the planting committee to keep things organized. The plantation now has over 700 trees planted there, in addition, Glen Geiinas has been very active organizing smaller planting circles with high profile environmental groups. Under his supervision 28 trees were planted at the Nature Conservancy's Deer Lick preserve, a circle of nine trees were planted in the arboretum of Buffalo Audubon's Beaver Meadow nature preserve and another nine were planted at the Buffalo Museum's Tift Farm Nature Preserve by school children. Glen has plans for at least four more sites to be planted in the near future. This past spring a volunteer work party erected a *70'* scaffold around *a* 22" DBH American chestnut in Niagara County and cleared brush to release young, existing chestnuts growing there.

FIFTH ANNUAL MEETING ATTRACTS 70 PEOPLE

"Liquid Sunshine", stimulating reports, hands-on workshops, a festive anniversary dinner and speaker, and individual chestnut talk, talk, talk marked ACFNY's Fifth Anniversary Meeting. It was held on October 20, 21 and 22, 1995 at the Frost Valley Conference Center in the beautiful Catskills with over 70 attendees.

On Friday, early arrivals socialized around a fire with a light supper. On Saturday, the "Liquid Sunshine," as the upbeat staff called the rain, was ignored as president Herb Darling opened the meeting with updating reports by Committee Chairman and District Directors plus an election of Board members and officers. And, it was announced that we reached our membership goal - 500 paid members by our Fifth Annual Meeting! A total of 514 as of October 21 was enthusiastically received.

Dr. Charles Maynard and Dr. William Powell of the College of Environmental Science and Forestry in Syracuse, gave a presentation of the progress made in their genetic research (reported in depth separately).

Workshops on Hypovirulence, Identification, Planting and Pollination, Chestnut Problem Solving, Mud Packing and a Taxonomy session identifying nuts for the Harvest Exchange occupied the rest of the day. One member commented "I've learned so much here, not only from the programs, but from the bull sessions."

Saturday evening was climaxed by the candlelit anniversary dinner complete with turkey and chestnut dressing. Dr. Sandra Anagnostakis of the Connecticut Agricultural Experiment Station was our featured speaker and gave an interesting overview of the American chestnut story and a hopeful projection for the years 2000 plus. She described her work with hypovirulence and touched on the imminent gall wasp problem as well as the ACF research farm in Meadowview, VA where 5,000 trees in the backcross program are growing.

Sunday began with the Table Topics Breakfast followed by the Harvest Exchange with 4,600 nuts being shared among planters. Several members joined a chestnut walk sponsored by the Catskill Forest Association.

The formal meeting ended with a meeting of the board where in addition to current business, the President's Award chestnut plaques were presented to District Directors Frank Munzer, Roy Hopke and Margaret Collins.

The meeting concluded with an informal luncheon discussion of future work and - you guessed it - more chestnut talk.

NEW DIRECTORS AND 1996 OFFICERS ELECTED

At the October Annual Meeting the following Directors were elected by the members present:

Class of 1996, One Year Term

Margaret Collins
Lewis Decker
Thomas Deacon
Adrien Gaudreau
Craig Hibbin
Roy Hopke
Theodore Kozlowski
T. Urling Walker

Three new Directors were elected to fill vacancies in the Class of 1995 and 1996, Two Year Term. They were:

Woody Clark
Frank Munzer
William Snyder

The following officers were also elected:

Herb Darling, President
Stanley Wirsig, Vice President
Arlene Wirsig, Treasurer and Secretary

FUNDING 68% IN PLACE TO COMPLETE GENETIC RESEARCH

Creating a disease resistant American chestnut is key to ACFNY's ultimate goal. A two year proposal by SUNY's College of Environmental Science and Forestry at Syracuse at the cost of $125,000 was made in June, 1995. Because of SUNY's track record, manpower commitment and personnel enthusiasm, this was accepted and a search for funding initiated.

So far $85,000 of the $125,000 has been promised. As we all know, the last $40,000 will be most difficult. If members know of individuals, corporations or foundations which might be interested in helping us achieve our goals, please contact Herb Darling at (716) 632-1125 or through our Museum address.

Thanks to the following ACFNY's donor friends

A donation of $5,000 from DuPont was designated by Michael N. Webb, a DuPont employee. As a reward for suggesting an innovative idea at the DuPont Speciality Chemicals facility in Niagara Falls, Mr. Webb was allowed to select any "cause" of

(Funding, con't on page 8)

An ACFNY member brings leaves and burs for identification at the Annual Meeting workshop led by Dr. Richard Zander at the microscope in background and Phil Gordon, prominent chestnut authority, to right.

PRODUCING BLIGHT-RESISTANT AMERICAN CHESTNUTS THROUGH GENETIC ENGINEERING

By C.A. Maynard, Z. Xing, W.A. Powell SUNY, and C.M. Catranis, College of Environmental Science and Forestry Syracuse, Hew York

The American chestnut genetic engineering project at the SUNY College of Environmental Science and Forestry is progressing steadily. We are attempting to produce a blight-resistant American chestnut tree by using genetic engineering to transfer genes into American chestnut trees. These new genes should allow the trees to degrade fungal cell walls and cell membranes before the blight fungus can cause serious damage to the tree.

The first step in the genetic engineering of American chestnut, identifying and preliminary testing of antifungal gene products, has been completed. Three potential pathogen-resistance genes are at various levels of development. One gene encodes an antimicrobial peptide, which was designed to function like a frog skin peptide. When expressed in the frog, the peptide produces holes in the membranes invading antimicrobial peptide similar to one found in the seed coat of amaranth, a South American grain which was a staple food of the Incas. The amarath peptide interferes with fungal cell wall synthesis. Lastly, we are working with a gene encoding a defensive enzyme from the poplar trees. This enzyme can digest parts of the fungal-pathogen's cell wall. We plan to use at least two of these genes attached to genetic control elements which will help restrict their production to areas of infection. The first trial forms sf the two peptide genes have been placed in plant transformation vectors. We are now ready to begin experiments directed toward production of transgenic American chestnut trees,

The second part of the project involves development of procedures to transfer genes into cells of chestnuts and to regenerate those cells back into a whole tree, which can then be tested for blight resistance. We are working on several approaches to gene transfer and have managed to produce small clumps of cells (called calli) that appear to be expressing the foreign genes. Regeneration of whole transgenic plants is our next goal. We are currently testing a number of new and promising approaches. One of the most favorable genetic engineering methods uses embryos isolated from immature nuts and maintained through embryo multiplication (called somatic embryogenesis) in tissue culture. In other plant species, embryos have been shown to be very amenable to genetic engineering and were found to be easier to regenerate into whole plants than other tissues. Last summer, Herb Darling, Alan Rand, John Ellis, James Donowick and Craig Hibben, members of the ACFNY, graciously supplied immature chestnut burs from 10 American chestnut trees. After disinfecting the burs, we were able to extract immature embryos and establish them in culture. Out of the ten trees, two produced embryogenic cultures. Assuming that these immature embryo cultures keep growing vigorously, we expect to begin using them to produce transgenic trees for pathogen resistance studies in the near future.

We feel that there are several advantages to using a genetic engineering approach to produce a blight-resistant chestnut tree. One of the primary advantages is thar the .American chestnut.genome will remain essentially intact. Genetic engineering will add only two or three genes to 200,000 or more native tree's genes; while trees from breeding programs may retain hundreds to thousands of genes from the exotic species. Another advantage is uniqueness. The chestnut blight pathogen bas been exposed for eons to all of the resistance genes found in the Chinese chestnut genome, but we rather doubt if the pathogen has ever encountered the frog-skin or amaranth peptides.

Drs. Powell and *Maynard* **answer** questions *at the Annual Meeting after their presentation of their work* on *genetic* engineering. *Dr.* Xing *also participated. President Herb Darling is shown to right.*

TEACHERS TAKE CENTER STAGE

While funding is still being sought to produce materials, the educational process and the chestnut tree are very alive thanks to many dedicated teachers! Nearly 30 teachers involved in the designing and testing of lesson plants continued to grow trees from seed in the ciassroorn. These trees including some of the 100 grown by agricultural vocational ed. students at McKinley BOCES are now alive in groves at the Buffalo Zoo, Tift Nature Preserve and school grounds including a fence row requiring very little space at JFK High School. Of course some trees made it home with enthusiastic students and teachers.

Earth Day and Arbor Day events included testing *Chester Safari,* a lesson and activity on chestnut identification and *Chestnuts and Blight,* a blind tag game on the spread of disease and promise of resistance with children at Tift; ten elementary classrooms, grades K-5, were taught by ACFNY volunteers at The Hyde Park School and a workshop for training tour guides was conducted at the Beaver Meadow Audubon Center to accompany the grove planted in their arboretum.

We have also developed new friends at the Roger Tory Peterson Institute in Jamestown. The motto, "leading the way in nature education" is certainly fitting to describe their Selborne Project, where the American Chestnut has found a niche in this multi-disciplinary team teaching approach.

It was two issues back that Charlie Chestnut made his newsletter debut as our cartoon character spokesperson. The script for a video of the adventures of Charlie, Buster Blight and Ginny Gene is now in preparation for the under ten crowd and the young at heart. Its target is grades 3-5.

Our thanks go out to all the teachers for their hard work and outstanding results. A speciai thanks to Don Birdd, Barbara Ann Newton and Ken Rogan for bringing cur cause and invitation to a session of over 35 teachers at the annual con-/ention of the Science Teachers Association of New York State.

NEW YORK STATE FORESTERS LEND A HAND

Last year the DEC appointed Wayne Cooper, Regiona! Forester in District 9, to act as Forester liason with ACFNY. He has alerted DEC Foresters throughout the state to become involved with our District Directors when they make contact. So far several of our Directors have done so and the Regional Foresters have been invaluable in working out appropriate plantation sites on DEC land, reporting the location of isolated American chestnuts, etc.

Mr. Cooper, in addition has distributed ACFNY information bulletins to forester offices throughout the state for hand-out to interested people.

A program of growing seedlings from New York State seeds collected by ACFNY members in the DEC's Saratoga Nursery will assist several of our Districts in securing healthy seedlings for planting.

IN MEMORIAM

RUTH WHITE

Many donations have been received from relatives and friends in memory of the wife of William White, a dedicated, active member of ACFNY.

BLOSSOM WALK

On July 2, 1995, a group of ACF members visited Chestnut Ridge Park and Shale Creek Sanctuary to see chestnut trees in flower. Short hikes were rewarded with the sight of the characteristic creamy catkins and small green pistillate flowers crowning trees of several chestnut species. Participants observed favorite trees from previous walks and shared locations of other American chestnuts, which continue to be found in the park. Early July is an ideal time to locate chestnut trees, as few other trees are flowering at this time. ACF members have used knowledge gained on these walks to find other chestnut trees, to gather Chinese chestnuts for the "traditional" chestnut stuffing; and to enrich our seed orchards with American chestnuts collected from the Shale Creek trees.

Students and teachers at the Buffalo Zoo Science Magnet School plant American Chestnuts as part of Zoo *Day. 1,700 students visited the zoo for these two days of educational programs.*

The Bur
New York State Chapter
American Chestnut Foundation Inc.
c/o Buffalo Museum of Science
1020 Humboldt Parkway
Buffalo, NY 14211

1990 - 1995

5 YEARS OF PROGRESS

AND GOING STRONG!

Funding, con't from page 3

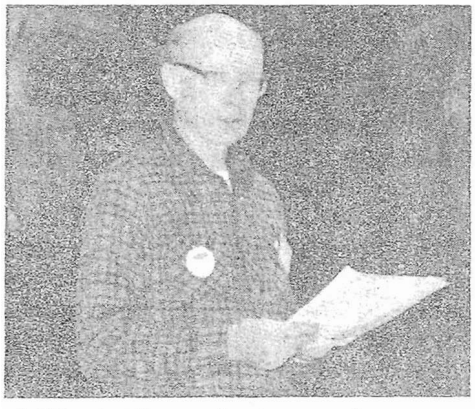
his choice to receive a $5,000 contribution. After hearing the ACFNY story, among others, he sent DuPont's $5,000 check to us with a letter saying in part: "I hope this donation will bring us much closer to the revival of the American chestnut tree as a thriving species". Thank you Mr. Webb and Dupont.

A generous $50,000 donation spread over two years was received from an anonymous donor.

Another important donation was made by Carol and Reg Newman II amounting to $10,000 spread over the two years of the grant.

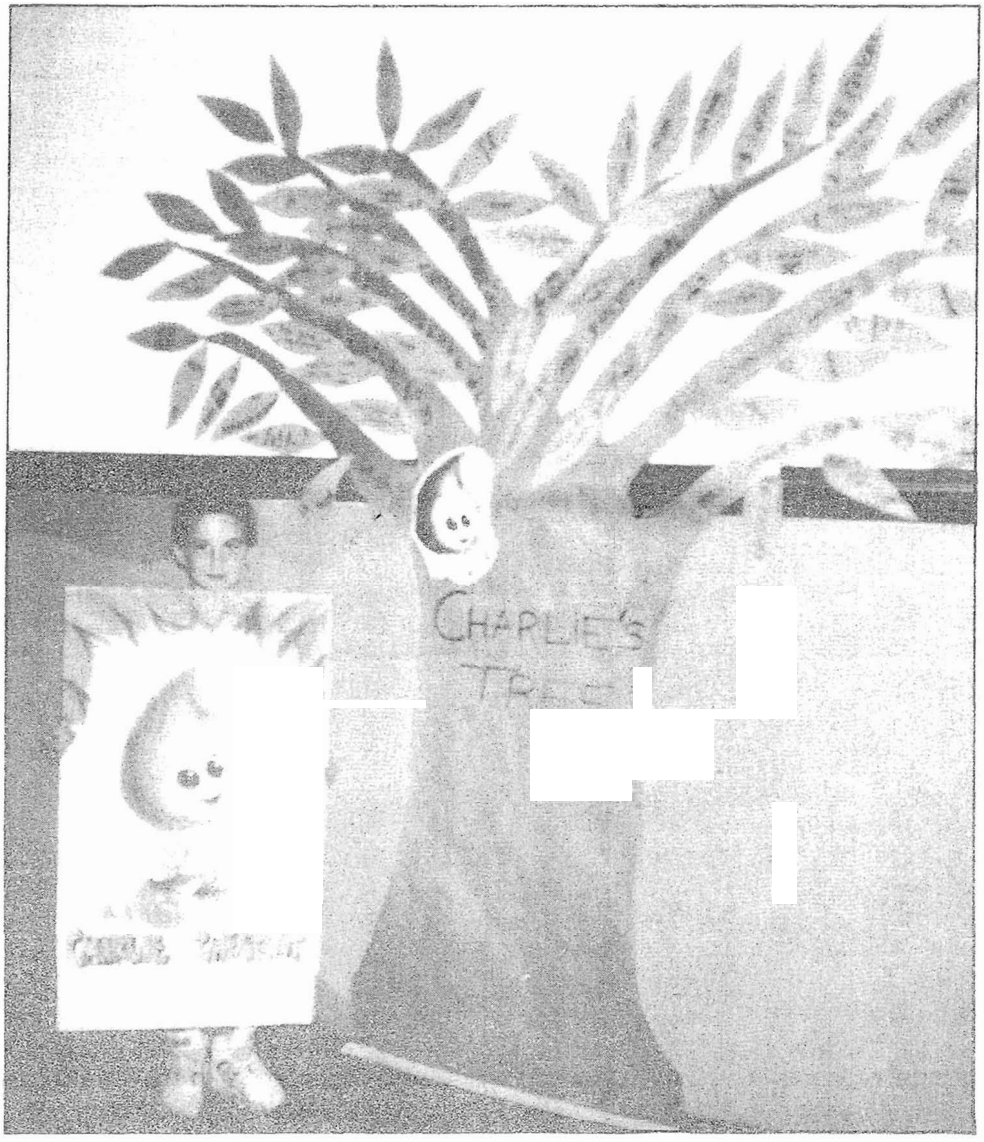
The remaining $20,000 of the $85,000 committed so far will come from the ACFNY. This amount is composed of membership dues and member contributions.

Thank pou all for your help.



A District Report is presented to members at the Annual Meeting by Frank Muzer, Director of District 3.

(see District News on page 2)



Students at The Hyde Park School pose with Charlie's Tree. On each limb is written a teachers name for their class and on each leaf is written a student's concept of the importance of the American chestnut.