The Association of Chinese Food Scientists & Technologists in America

旅美中國食品科技學會

會誌

NEWSLETTER

Vol. 4, No. 4

June, 1982

NEWSLETTER VOL.4. NO.4 JUNE 1982

1981-1982 OFFICERS

President:	Sherman S. Lin	林信南
President-Elect:	Anthony H. Chen	陳慶鈞
Secretary & Treasurer:	Peter J. Wan	萬建心
Committee Chairman:	Fund Raising Committee: Sherman S. Lin Consultory Committee: Anthony H. Chen Education Committee: William T. H. Chang 张天鴻 Employment Committee: Robert T. I. Ma 馬子義 Annual Meeting Committee: Santa H. Lin 林輝正 Publication Committee: Peter J. Wan	
Mailing Address:	Anderson Clayton Foods 3333 N. Central Expressway Richardson, Texas 75080 Telephone: (214) 231-6121	

For membership application and other information, please contact one of the above members.

編者的話：

- 一年又一年，又是一年一度見面的時候，願大家藉此機会多交換一些意見。編者願藉此機會向各位為Newsletter撰稿的会友們致謝。因為您的支持而使得Newsletter成為一個交換有無的媒介。願各位繼續灌溉這個屬於大家的園地。
- 新的官員及President都已選出，只是遺憾在寄出的183張選票中只有60張寄回。如何改除這种懶於參与的通病，是各位会友的職責。
- 本期有四篇介紹公司學校的文字，這是難得的機会去認識一个"新"的公司或學府。希望其他的会友也抽空介紹一下貴公司或研究單位。
- SELF-IMPROVEMENT的文字本期內附印了兩篇，願發閱者有益之感。
- TECHNICAL的文字比較花心思，本期的三篇都是各位作者的專長，相信会友們讀之必有益智之感。
- 請会友們踴躍提供重要的活動消息。

ANNOUNCEMENT OF ACFSTA ACTIVITIES DURING THE 1982 IFT MEETING

Date	Time	Place	Activities
June 23, Wednesday	5-9 PM	Pavilion 11 Las Vegas Hilton (720) 732-5624	- Report from president. - Announcement of election results (Cash bar, no banquet)
June 24, Thursday	4-6 PM	Pavilion 11 Las Vegas Hilton	- Forum entitled: "Career Preparation and Development" organized by Dr. Joseph Jen. (Detail schedul is attached.)

POSITIONS AVAILABLE

National Taiwan College of Marine Science and Technology has the following three openings:

One Associate Professor each in (1) Food Microbiology, (2) Food Engineering, and (3) Toxicology or Environmental Engineering. If you are interested in any of these positions, please contact Dr. Bonnie Sun Pan, Department of Marine Food Science, National Taiwan College of Marine Science and Technology, Keelung, Taiwan, Republic of China, or talk with Dr. Sun during the IFT Meeting.

FINAL CALL FOR 81-82 MEMBERSHIP DUES

If you have not paid your membership dues, please send it to Peter J. Wan, c/o Anderson Clayton Foods, 3333 N. Central Expressway, Richardson, Texas 75080.

Student Member	$5	Professional Member	$15
Supporting Member	$30	Honorary Member	$50

REMINDER ON 82-83 MEMBERSHIP DIRECTORY

Any changes concerning your information in the upcoming Directory should be sent to the Secretary by June 11, 1982. An example of the content of the Directory is shown as follows.

NAME	HOME ADDRESS AND PHONE	BUSINESS ADDRESS AND PHONE	EDUCATION & SPECIALTY
CHEN, ANTHONY HING 陳慶筠	4113 Midnight Drive Plano, TX 75075 (214) 596-7049	W. L. Clayton Res. Ctr. 3333 N. Central Expwy. Richardson, TX 75080 (214) 231-6121	BS 69 UC - Berkeley MS 71 Ohio State U. PhD 78 Ohio State U. Manager Food Engineering

AGENDA FOR ACFSTA 1982 ANNUAL MEETING

June 23, 1982 (Wednesday)

Pavilion No. 11, Las Vegas Hilton

Time	Activity
6:00 - 6:30 PM	Business Meeting - President's Report - Treasurer's Report - Presentation of Appreciation Awards - Introduction of New Officers - New President
5pm 7:30 to 8:30 pm	Mixer (Cash Bar)

CAREER PREPARATION AND DEVELOPMENT FORUM

June 24, 1982 (Thursday)

4:00 - 6:00 pm

Pavilion No. 11, Las Vegas Hilton

FORUM MODERATOR:	Dr. Joseph J. Jen Campbell Institute for Research & Technology
4:00 - 4:20	Speaker on Career Preparation: Dr. Daniel Y. C. Fung, Professor, Food Microbiology (Kansas State University)
4:20 - 4:25	Discussion Leader: Dr. Tung-Ching, Lee, Professor, Food Processing, Nutrition and Food Safety (University of Rhode Island)
4:25 - 4:30	Discussion Leader: Dr. James H. Moy, Professor, Food Engineering (University of Hawaii)
4:30 - 4:50	Speaker on Career Development: Dr. Anthony H. Chen, Director, New Technology (Anderson Clayton Foods)
4:50 - 4:55	Discussion Leader: Dr. Min-Nan Huang, Vice President, R&D and Engineering (Alkar/DEC International Inc.)
4:55 - 5:00	Discussion Leader: Dr. Michael C. Tao, Section Manager, Nutritional and Dietary Foods (Mead Johnson & Co.)
5:00 - 6:00	Open Discussion: Questions and Answers

VOTING RESULTS FOR NEW OFFICERS 1983

Total Number of Ballots Mailed: 183
(Three were returned)

Total Ballots Collected: 60

RESULTS:

President:	Chen, A. H. (陳庆鎬)	57
	Ma, R. (马子義)	2
	Tao, M. (陶至真)	1
President Elect:	Chu, George (朱正中)	55
	Ma, R. (马子義)	2
	Fung, D. Y. C. (馮貽澤)	1
Executive Committee:	Tzen (曾竹雄)	28
	Wan (萬建心)	49
	Yang (楊安琪)	39

	Yes	No	Absent
Change By-Law from the one year term to two year term for president	40	16	3

CONGRATULATIONS TO OUR NEW OFFICERS FOR 1983-1985!

President: Anthony H. Chen

President-Elect: George Chu

Executive Committee: Peter Wan and Angel Yang

WELCOME FOUR NEW MEMBERS:

CHEN, CHUIN CHIEH 陳俊潔
CHEN, ENOCH 陳裔榮
HSU, HAI AN 蘇海安
WU, PERRY H. 吳顯裕

ACFSTA FINANCIAL REPORT
(As of May 31, 1982)

Item	Income	Expense
Balance from 1980-1981	$ 595.16	
Membership Dues (103 members)	1,827.00	
Interests	11.86	
Office Supplies & Typing Service		$ 78.23
Consulting Bulletin Printing		107.35
Newsletter		
Extra: Printing		
Postage		
Vol. 4 No. 1: Printing		253.20
Postage		
Vol. 4 No. 2: Printing		232.32
Postage		116.00
Vol. 4 No. 3: Printing		199.33
Postage		125.25
Ballots for New Officers		
Printing		69.40
Postage		40.00
Eight 8"x10" Plaques for Appreciation Award		140.00
		$ 1,361.06
Balance		1072.94
	$2,434.02	$ 2,434.02

Total 103 members have paid their dues

Student Members	35
Professional Members	53
Supporting Members	12
Honorary Members	2
Corporate Members	2

PROFESSIONAL ACTIVITIES

- Award Committee of ACFSTA headed by George Chu with the following committee members: T. S. Chen (陳同善), Y. Hang (韓　勇), T. C. Lee (李東庆), and C. G. Ying (殷长赓) has already selected the individuals who have made great contribution in serving the ACFSTA. These selected members will be presented a plaque as a token of appreciation from the ACFSTA.

- There will be a series of presentations and discussions on the topic of "Tuna Fish Processing and Handling" between August 5 to 7, 1982. After the meeting, several processing plants will be visited. Two ACFSTA members, H. M. Soo (蘇鴻銘) and W. K. Nip (聶威杰) will participate in the meeting and give talks.

- Tony Chen has chaired a symposium "Hydrogenation" during the Annual AOCS Meeting at Toronto, Canada.

- George Chu has attended and presented a talk at the Annual Baking Seminar held in April at the Texas A&M University, College Station, Texas.

- A short course was organized for overseas Chinese students at the University of Texas at Dallas by Tony Chen. It covers the following topics: (a) Job Hunting and Interview, (b) How to Function Effectively in an Organization, (c) How to Make an Impressive Presentation, (d) Immigration Law, (e) Case Study of Successful Managers. Copies for these topics will be available to the members of ACFSTA upon request.

- During the Annual IFT meeting, the following members are willing to provide consultation for job hunting and interviews. If you need their assistance, do not hesitate to seek them out or leave message at the registration desks at the convention center or their hotels.

William Chang	(張天鴻)	Tony Chen	(陳庆鈞)
David Chou	(周鴻恩)	George Chu	(朱正中)
Joseph Jen	(任鋭山)	Santa Lin	(林輝正)
Sherman Lin	(林信南)	Peter Wan	(萬建心)

  These are only the names available at the time for this Newsletter.

- <u>Share Hotel Room during IFT Meeting and Save</u>:

  Professional Members: If you could share your reserved room with a student member, please let the secretary (Peter Wan) of ACFSTA know your name and the hotel in which you are staying.

  Student Members: If you wish to share the hotel room with a Professional Member, please notify Peter Wan as soon as possible.

THE CLOROX COMPANY

By Samson T. Hsia

You probably know that The Clorox Company makes a popular brand of household bleach. But you may not realize that while bleach is still a major part of its business, The Clorox Company today manufactures and markets a wide variety of other products including a line of retail and institutional food products.

Clorox was founded in Oakland, California in 1913, when a small group of businessmen formed the Electro-Alkaline Company, forerunner of The Clorox Company. At the start, the Company's market was industrial customers who purchased **Clorox** liquid bleach for use as a stain remover, deodorant and disinfectant. The product, in five-gallon crockery jugs, was delivered by horse-drawn wagons to laundries, breweries, walnut bleachers and municipal water companies in the Bay Area.

Clorox liquid bleach was first introduced for household use in 1918. The wife of the Company's general manager subsequently began giving away pint bottles of **Clorox** to patrons of her retail grocery store. These early customers came back for additional samples to give to their friends. The new laundry product's reputation for consistent quality gradually spread. Today **Clorox** is a household word, and the product is made in 13 plants in the United States and Puerto Rico.

In 1957, The Clorox Company was acquired by The Procter & Gamble Company. The Federal Trade Commission immediately challenged the acquisition, charging violation of antitrust laws. In 1967, the Supreme Court of the United States upheld the FTC ruling and in January 1969 Procter & Gamble divested itself of The Clorox Company. Since then, Clorox has diversified and expanded into a company with annual sales exceeding $900 million and with approximately 6,000 people located at more than 40 operating facilities in the United States, Canada, Puerto Rico and Spain.

Among other non-food products, Clorox now makes **Formula 409** spray cleaner, **Kingsford** charcoal briquets, **Liquid-plumr** drain opener, **Soft Scrub** cleanser, **Olympic** interior and exterior stains, **Clorox Pre-Wash** laundry soil and stain remover, and **Tilex** instant mildew stain remover. Among food products, Clorox now makes **Hidden Valley Ranch** salad dressing mixes, **BinB** canned mushrooms, **Kitchen Bouquet**, a browning and seasoning sauce, **Salad Crispins** salad toppings and **Moore's** frozen onion rings and other breaded specialties. It

manufactures and sells products for both retail and food service market, including commercial restaurant operations and institutional customers such as hospitals and schools. Clorox also owns and operates a small, but growing chain of restaurants in Northern California.

While much of the company's growth has come as a result of acquisitions, Clorox is relying more and more on internal product development as a primary source of its future growth. A modern technical center to develop new products and improve those already on the market is located at Pleasanton, California. The Center houses approximately 300 technical and support personnel. The Food Products Department currently has ten professional and six technical staff engaging in new product development and brand support activities. Other food professionals are in such support functions as process, package, analytical, sensory, microbiology, quality assurance and corporate engineering.

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Members who have paid their dues during last three months (March — May, 1982) are listed as follows:

Student Members:

Hsu, Hai-An	Yao, Jeng	Wong, Teck M.
Chen, Yih-Rong	Wu, Hsien-Yat	Wang, P. L.
Jen, Yale	Chen, Chuin Chieh	Chang, Yung-Syi

Professional Members:

Jen, Joseph*	Lin, Chi-Fa*	Chen, Chee-Teck
Ho, Chi-Tang	Lo, Grace	Hang, Yong
Chen, Shiow-Ling	Tsai, Lee Shin	Mao, Wei-Wen
Chen, James C.	Chen, Ada*	Kuo, Chung-Kung
Liu, Richard T.S.	Ni, Peter Y.	Huang, Emil A.
Huang, I-Lo		

*Supporting Member

堪薩斯州立大學農學院之一二

Kansas State Univ. 是美國第一所 Land-grant Univ. (或說 Michigan State Univ), 同時位於美國中西部畜牧穀物中心地帶. 故農學院歷史甚為悠久。

Grain Sci. & Industry 是此校最具特色的一系。大學部授與 baking, feed, Milling Sci. 三种學位。研究所則授與 baking, feed, and grain milling 有關之行政, 化學二種學位。目前有近10位中國同學在此攻讀碩士博士學位。教授約廿餘人, Dr. C.C Tsen 亦在此。校區附近有當美國農部之 U.S Grain Market & Research 及 American Institute of Baking, 使得此地儼然成為美國研究 Grain Sci. 之中心。常有各請農發會派人來此進修。

Food Sci. Grad. Program 統轄於 Animal Sci & Industry Dept. 中。在 Dr. Daniel Y. C. Fung 經營之下目前有研究生近四十位。(中國同學有七位)。分別攻讀化學, 微生物, 加工, 管理, 營養。研究的對象主要有畜牧, 乳品, 禽產, 穀物及蔬果類。此 program 網羅教授約四十餘位, 分別來自畜牧及工業, 食物與營養, 穀物加工, 園藝, 生化, 微生物, 農機, 化工等系。 (陳一村)

KNUDSEN CORP.

Knudsen Corporation was founded by Tom Knudsen (a Danish immigrant) in 1914 in Los Angeles. Mr. Knudsen started his company by converting skim milk into cottage cheese. Yogurt and buttermilk soon joined the product lineup. Fluid milk was not added until the 1930's. Today, cultured products are still the main emphasis of the company.

Knudsen Corp. is basically a dairy company. The company employs a work force of 2,100 at eight plants and sixteen distribution centers. Its revenues for 1981 was 450 million. Knudsen has two wholly owned subsidiaries. 1). National Fast Food Inc., which operates a chain of deli-grocery stores under the name Hoagy's Corner. 2). Knudsen Agricultural Management Co. (KAMCO), which arranges for capital and provides management counseling to dairy farmers. KAMCO is involved in the operation of eight dairy farms and one heifer ranch with 6000 holstein cows and 4600 heifers.

Knudsen produces more than 225 different dairy products, styles and flavors. It's products are sold throughout California with selected distribution in Nevada, Arizona, Idaho, Colorado, Utah, Washington and Oregon.

In 1978, Mr. William Schmal joined Knudsen Corp. from Carnation Corp. as President and became Chairman of the Board in 1982. Mr. Schmal has engaged an ambitious plan for the expansion of the Knudsen Corp. He is shooting for revenues in excess of 1 billion annually and 3% after-tax earnings by 1985. The push to achieve that goal is on. The activities in Research and Development (where I work) are extremely heavy. Finally, Knudsen was elected as "Dairy Processor of the Year - 1982".

Yi-Do Lin

Philip Morris 公司简介　　徐孝陵

一般来说，美国的食品工业是属于成长及利润都属于稳定的局面，在烟草及饮料方面也不例外。Philip Morris 那以 Cowboy 的形象，一面抽着 Marlboro，喝饮着 Miller beer 及 7-up，一面驰骋于汉子草原上，一一击败其对手。此公司去年的业绩已达美金一百億以上，十九年前她还是个寂寂无名的小公司，现在已是全美第二大的香烟公司，主要的产品一 Marlboro, Merit, Benson & Hedges, Virginia Slim etc. 之销路渐渐逼进第一把交椅的 R.J. Reynold. 美国国内的香烟销量虽趋降势，但在国外市场上仍快速成长。Philip Morris 已是全世界最大的美国香烟公司。其成长之秘诀在于强而有力的 Marketing，品质的高超及开放大胆的经营法，在成长不高的市场中以吞食其竞争对手的 Market share 之方法来维持成长。另一个因素是香烟及啤酒不太受经济向势影响。失业的人愈多，香烟及啤酒的耗量似乎愈大了。

Philip Morris family 主要分以下的子公司：

(1) Philip Morris Inc. 总公司所在，设于纽约。敝人便是在其中 Corporate Research 的 Beverage 部门工作，专为各子公司做 Technical service，本部门在 Richmond, Va.

(2) Philip Morris U.S.A. 一设于 Richmond, Va.，是国内香烟的生产商，主要的 Brand—Marlboro 是目前全美最大的 Selling Brand，研究部门约六百人。

(3) Philip Morris International 一行销世界 170 国以上，其所属的 7-up International 也行销 90 国以上。

(4) Miller Brewing Co. 一九年前还是啤酒中第七名的 Miller beer 如今已爬到第二名。Low-Calories 的啤酒以 Miller 的 Lite 为始祖。

(5) The Seven-up Co. — 底下擁有做香料的 Warner-Jerkinson 做果汁的 Ventural Coastal Co. 及做 Freeze dried Food 的 Oregon Freeze-Dried Co. 目前 7-up 在調整階段，希望以新產品及新的經營法尋找此下降的銷路。

(6) Philip Morris Industrial — 以包裝及化学品为主。

(7) Mission Viejo Co. — 經營房地產，主要是加州 Orange County 的 developer.

以上是本公司的簡介，若貴行有任何問題，請直接與我連絡 David H Hsu (714) 274-4670 Beverly Hills 的 Philip Morris Inc.

LOOKING FOR A JOB IN THE CHEMICAL INDUSTRY

Albert F. Yee

from: Chinese American Chemical Society, Newsletter 82:1

This article is written for those of you who are in the process of seeking employment as a chemist or chemical engineer. From all indications the technical job market, though not as good as last year, is still holding up well despite the recession. This is especially true for chemical engineers. By the time you read this article many of you will have concluded a round of campus interviews; some of you may have gone on plant interviews. Unless you have visa status problems, chances are extremely good that you will have landed a couple of job offers by the end of the Summer. So getting a job is not the question. The real question is: will you get a job that you really want? Do you know what kind of a job you want?

These are not rhetorical questions. If you are not sure about the answers, let us explore a few pertinent points.

If you don't know what kind of a job you want, it may be a blessing in disguise. Many of us rush into our first jobs, only to discover that we are in them perhaps for a variety of wrong reasons: job availability, familiarity with a certain work area, misunderstanding about the nature of the job, and so on. Since your first job can have a significant bearing on your future career, it pays to consider your options before you commit yourself.

Perhaps because of our cultural heritage, and sometimes becuase of a real or imagined language handicap, many of us are loath to consider opportunities in sales and marketing, or in people/customer oriented jobs. The fact is that these jobs can be very rewarding, especially monetarily, and in promotional opportunities. Too often we shut ourselves out of these areas before we have given them a fair chance. Good technical people with good people-skills are hard to come by, and are greatly valued.

In my campus recruiting trips I find that people with advanced degrees are prone to seeking jobs in research and development, especially in areas in which they are trained. They are often reluctant to consider other possibilities. Many Chinese-American scientists I know who have jobs with a small R and a big D look upon their jobs with a certain amount of lamentation, even though they are doing very well in their capacities. This is regrettable, since, by doing so, they may be pursuing their careers only half-heartedly, and are not enjoying the fruits of their labor.

A particularly devastating result of this psychological syndrome, which can be traced to our cultural heritage, is the self-fulfilling prophecy which works in the following manner: "Doing basic research is the ultimate, doing anything else is a compromise;" we say to ourselves, "and in any case we Chinese can't compete with those Americans in _____ (sales/marketing/manufacturing/management/---)." Then we wonder why we are passed up for promotion. Suspicions of racial discrimination lurk constantly in our consciousness. A thorough examination of this problem is beyond the scope of this article, and certainly beyond the capabilities of this author. It is not my intention to dismiss racial discrimination as imaginary. I am just pointing out the importance of open-mindedness in job selection.

The next problem is finding the job you want. Unless

you have your mind set on certain big companies that recruit on campus year after year, just going to these campus interviews is insufficient. Many smaller companies recrui t only regionally, or not at all. If you like more responsibilities, a more intimate working atmosphere, and faster promotional opportunities, smaller companies may have the edge. Small does not necessarily mean deficiencies in sohpisticated technology. Some small companies are definitely very "high-tech", such as those related to the computer/IC and the bio/genetic industries. Big does not necessarily mean "high-tech", either; although it is probably safe to say that more big companies have long-term committments to expensive R&D projects. But even if you want to work for a company that does recruit on campus, you can't be sure that the recruiters will get your resume to the right people. So here's what you must do: thoroughly research the companies that engage in work you are interested in, find out who is in a position to hire you to do that work, and write directly to him. If you have what it takes, your resume is well written (more on this later), and if the manager who is the target of your letter is worth his salt, he will want to talk to you. Ask yourself this question: is it worth your while to spend, say, the equivalent of three semester credit hours to thoroughly research the companies in order to get the job you really want? The answer is self-evident.

Contrary to common belief, most industrial positions are filled by write-ins, not by campus interviews or by employment agencies. However, writing to the personnel director should be your last resort. Many personnel office staffers lack the detailed technical knowledge to route your resume in an effecient manner. This brings us to the subject of resume preparation.

A good resume should have the high-lights of your accomplishments, your functional objective, and your organizational objective. Consult a book on resume preparation. Spend some time to make it look good. If you don't have access to an office-quality typewriter, engage the services of a professional typist. Have a friend check your English. Ungrammatical resumes and cover letters are not rare. They come from both native English speakers as well as foreign-borns. But if you happen to be a foreign-born, there is a good chance that someone will seize upon that as evidence that your comunication abilities are below par.

In this article I have not attempted to be comprehensive or balanced in my approach. Instead I have tried to point out some areas that I think may be of particular concern to Chinese-American chemists and engineers. My opinions are necessarily based on limited personal observations and informal discussions with several individuals. It is hoped, however, that my experience as a some-time campus recruiter is of some help to my younger colleagues.

Career Development–6

Managing Your Career

Career development is a personal art form. And, although you can't control it totally, you can influence it. Here's how.

P.C. Lewis, Exxon Research & Engineering Co., Florham Park, N.J. 07932

Some people reading this article are facing career decisions and asking themselves questions such as, "What am I going to do with my life? How do I find out what its like to be whatever I'm going to be?"

How I got to where I am today showed me that sometimes career development is learned by looking behind as well as looking ahead. So, what I would like to do is offer the perspectives of someone who has waded into corporate waters, swam a little bit, rocked the boat a few times, and is now in a organization that is wrestling with the very problems that you may be facing.

Many people are trying to figure out how careers work. The truth is that nobody really knows. There are no fixed rules. Career development is a personal art form. The truth is that you can't totally control it. You, as a primary stakeholder, however, can influence it. There are three other major stakeholders in your career of whom you need to be aware. The first is your boss; the second, the organization for which you work; and the third, government. Twenty years ago, nobody talked about such things as legislation to open personnel files so that you could see what was being said about you in performance appraisals. Twenty-five years ago, there weren't pending discrimination and affirmative action suits. These stakeholders are seeing you more instrumentally than the way you see yourself. They will be looking at you as an important piece in their particular business puzzle. Those of you who have some silver among your hair may know that there are times when you've been part of this bigger puzzle and that you really can't control the pieces.

To a company, a career development program may be the way the company keeps out of hot water in managing women, minorities, and people who are older. Career development at the corporate level becomes bigger than individuals. It becomes part of the major pieces in organizational politics. What career development is depends on with whom we are speaking.

Other articles in this series are: (June issue) "Does It Pay to be Noticed?" pp. 14–15; "Showing Off Your Technical or Managerial Skills," pp. 16–18; (July issue) "How to Give an Interview That Recruiters Will Never Forget," pp. 18–20; "Can After-Hour Activities Shorten the Corporate Ladder?" pp. 23–24; (August issue) "What Do You Do When You Can't Help Standing Out in the Crowd?" pp. 23–24.

0360–7275/81/5346–0019 $02.00

Three stages

All of us are at one of three career stages—the establishment, the mid-career, or late career stage. Each is typified by certain kinds of feelings and job-related activities. Establishment is what occurs to those of you who are in your first 10 years of work life. It's typified by such things as looking for a variety of jobs and job activities. You want to feel challenged. There is a need to develop a lot of competence, to become visible quickly, to experience your own creativity and invention. It's a time of fruition. You want to rotate, professionally, through three or four job areas. You will be eager to take on new assignments that would take you from one location to another. You are going to experience rivalry and competition in this stage, and you're going to still experience some conflicts because of the demand which mobility will put on your domestic life. This stage is filled with growth.

The second stage, mid-career, shifts toward training and coaching others. You become more of a mentor in this phase. You develop a broader view of your work and the role of the organization. You begin to

Don't wait for the company to serve you. Instead, find the people in the organization who can help your career.

have a lot of influence across a variety of areas. You may begin to experience feelings about midlife crisis during this time. You reorganize your thinking about yourself and your relationship with your family. You want to be with your family and the work isn't so important after all. You may have also climbed up the ladder and there are limited opportunities at the top. You may say, "Why fight so hard because there are fewer positions to scrap over. I'm going to get a different kind of career payoff now." There's a reduction in self-indulgence and competition.

Late career is a touchy area for our company and a lot of others. We have people who really need to think through retirement. They are trying to understand how to use their resources in the last five or six years of employment. People who are age 60 or older are facing an unusual life circumstance requiring empathy and a lot of an organization's resources. Industry is just beginning to mobilize in this area with such programs as retirement counselling and estate planning.

Companies and icebergs

The two kinds of resources of a business organization can be represented by an iceberg. The formal resources of the company are visible, above the waterline. But, as with icebergs, most of the resources cannot be seen, they are out of sight in the informal part of the organization. The formal part of the company includes such things as business plans, technical ladders, pay scales, benefits, and the size and location of your office. Invisible elements are such things as attitudes and norms, which are very powerful in an organization because they determine "proper" behavior. Each company has standards that are just a little different from those elsewhere and it is to your advantage to find out what they are.

An important area involving a company's formal resources is its reward system for working toward its goals. If there are shortcomings here you, as employee, will suffer. For example, does the company provide opportunities for broadening one's education? Does it have a good compensation policy? Does it have mechanisms for promotions? Does it have a good technical ladder? Can engineers get their jobs enlarged during their careers or do they just stay on the shelf?

Here are some other questions you should ask about a firm's rewards systems. If you don't like the answers to them you probably won't like working for the company.

Is there a professional recognition program?

Are there patent awards? There are very important to engineers in their first 10 years when they are most likely to have a burst of invention.

Are there special incentive awards, bonuses for special achievements that aren't patented?

Does the company provide career planning opportunities or assistance in self-assessment?

Is there preparation for retirement?

Tomorrow's work

Finding the right company to work for is one way to improve your chances for success. Even more important than that, however, if you're interested in a rewarding career, is having the proper skills. Recently, vice presidents of several large firms that employ thousands of engineers were asked what skills engineers would need in the future. The identified four of them.

First, they said, know about energy technology, know how it's applied in your field because this is an area that is of vital interest to industry for reasons to obvious to mention.

Second, is economics. Knowing about the cost effectiveness and the impact of decisions on the payoff to the company will really make you important to the firm beyond your being technically proficient.

Third, is computer science, which is revolutionizing the way all companies do business. In fact, it is catching many of those by surprise who have been working for 10 years or more. Those who are just getting out of college may think of computers as pervasive in industry as the telephone. Although this is not the case with my company, we are talking about having computer outlets accessible to every scientist and engineer.

Writing and persuasion are fourth. Being articulate makes the difference between an idea staying in the drawer and moving into the organization and making a contribution.

Sponsors and mentors

While you're developing the right skills, you should also take some time to meet the right people. There are two types of people in a company who can make a difference to you—sponsors and mentors. A sponsor is someone who can teach you the codes of the organization. He knows how the system works. He can show you how the system works. He can show you how to accommodate the norms, how to rock the boat constructively. He can help you get justice.

Sponsors are people who believe in your talent. They will want you to work on major projects. They want you to have exposure. Don't wait for the company to serve you. Instead, find the people in the organization who can be of assistance to your career.

簡談俄州乳豆腐 (Ohio Curd)

彭仲燕

自從淮南王在公元前160年左右用黃豆創製豆腐，數千年來，無論貧富貴賤，男女老幼，豆腐成了大眾化食品。筆者於十餘年前初來美國時，豆腐視為奢侈品，不易買到；直到最近市場裡才有零售。

美國人喜歡乾酪 (cheese)，但每一磅乾酪的製造，便產生5-8磅的乳漿 (whey)，雖然政府一再鼓勵公私營企業加以利用，仍有許多的乳漿傾入排水系統，造成用水的污染。美國國會有鑒於此，曾於1979年七月廿四日召集公私企業代表，檢討乳漿利用的實際情況。

由於乳漿含有黃豆蛋白質所短少的含硫氨基酸，如將豆漿和乳漿混合，再加入凝結劑，則會收相得益彰之效，因此本系加入組着手這方面的研究與發展，其初成品命名為俄亥俄乳豆腐 (Ohio Curd)，希望有一天能夠像 yogurt 樣在市場上銷售。

西方人不喜歡黃豆的青氣味，所以經試驗後用等量的10%濃度豆漿與乳漿混合，結果既無青氣味，也無乳味。豆漿先煮沸，十五分鐘後冷却到70°C左右與乳漿混合，再加熱至90°C左右。

石膏不能凝結混合乳，所以根據產品的產量(yield)質地(texture)，和香味(aroma)，前後共試過十四種不同的無機和有機酸或鹽，或單獨使用，或混合使用，最後選擇glucono-delta-lactone (GDL)單獨使用，及與硫酸鈣(石膏)或氯化鎂混合使用。其成份為(1) 0.6% (w/v) GDL，(2) 0.6% GDL和0.05%硫酸鈣，(3) 0.6% GDL和0.17%氯化鎂。於混合乳漿溫度高在80°C以上時，加入凝結劑攪拌，5-10分鐘內即凝結成膠質狀豆腐，如馬上放入冰箱內則增快其凝結度，質地也較在室溫內硬些。

這樣做成的乳豆腐沒有任何特殊味道，含水量87-89%，蛋白質56-57% (乾重)，pH 5.0，所以微帶酸味，如混以新鮮水

菓，則與 yogurt 毫無差別。一磅黃豆，一磅乳漿粉，加水份和凝結劑，可製造十磅乳豆腐，其成本僅多#0.50左右。所含不可缺氨基酸(表一)或超過或接近聯合國糧農組織1957年的蛋白質範式，所以營養價值相當高。蘆量乳豆腐的最大特点，因整個混合乳包括水份在內，全部凝結成膠質狀豆腐，尤其耐貯藏，筆者曾將產品在冰箱內貯存一年餘，既無黴菌生長，也無水份分離現象 (syneresis)。

總之，俄州乳豆腐製法簡單，營養價高，經濟實惠，如混以新鮮水菓，不難製成與 yogurt 相比美之價廉物美之點心式食品。

Table 1. Essential Amino Acid Composition (g/16 g N)

Amino acid	Soybean curd $CaSO_4$	50% Soybean - 50% Cheese whey GDL	GDL-$CaSO_4$	GDL-$MgCl_2$	1957 FAO Pattern
Lysine	3.3	4.4	4.8	5.4	4.2
Total sulfur amino acids	1.1	1.1	2.5	2.0	2.2
Threonine	2.9	3.4	3.3	3.0	2.8
Valine	4.3	3.6	4.0	3.6	4.2
Phenylalanine	1.9	1.8	2.2	1.9	2.8
Leucine	4.9	5.9	6.6	6.0	4.8
Isoleucine	3.7	3.7	3.7	3.7	4.2

SPHERONIZATION

By. Y.C. JAO.

This report covers the basic principle of a unique process technology - spheronization technique. This process tends to up-grade a shaped solid product with the following superb physical properties: 1) improved particle flow properties, 2) ease of coating, 3) uniformity of size, 4) less friability, 5) reproducibility in packing bed reactor, and 6) increased hardness and bulk density. This process usually includes extrusion, spheronization and fluid bed drying. Principle behind each operation is described in the following sections.

A. Extrusion

There are three basic extrusion processes employed by various industry applications. In food extrusion, protein and/or starch material is fed to a solid conveying zone and then compressed forward down the channel between extruder barrel and screw by pushing and dragging force from the screw flight. The screw speed ranges from 400 to 800 rpm. This movement tends to create a large amount of friction and viscous disipation heat to initiate unfolding and cross linking of protein, and gelatinization of starch. The cooked molten mass is then further forced and oriented through an extruder die to form a textured product. High temperature and high pressure are essential in this type of extrusion.

The second type of extrusion is adapted for low temperature forming of heat sensitive materials such as enzymes and/or microorganism biomass. In this case, the screw rotates at a low speed with water cooling through barrel and/or screw to remove any heat created by the process. Sometimes, high pressure is desired to compress material through the channel of extruder and the die for a desirable product texture.

The third type of extrusion is much more gentle than the two described previously. The fed material is expired from the extruder through a perforated screen barrel. This type of operation is simply used to shape material of interest into a desirable size for further processing. In this case, the material processed through the system renders minimum temperature and pressure stress.

In general, extrusion process provides a versatile feature for texturizing and/or forming materials for further application. The success of extrusion operation requires full control of variables including: 1) physico-chemical properties of feed material, 2) screw configuration, 3) screw speed, 4) feed rate, 5) temperature, and, 6) die configuration.

A typical problem which occurs during extrusion of a high moisture material may cause conveying difficulty due to slippage; this will partially or totally reduce compression effect. The extrudates so obtained will further cause smearing and lumping during spheronization. On the contrary, a material with too low a moisture level may create a high friction heat through the extrusion process accompanying with die plugging. The extrudates so obtained may be shattered easily during spheronization because of lack of water which functions as a plasticizer.

B. Spheronization

A spheronizer basically consists of a rotating milled plate and a stationary cylinder wall. The extrudate from an extruder is fed onto the spinning plate where it is disposed against the cylinder wall and developed into an annular or doughnut-like shape with a quadrant cross section. The extrudates are initially broken into short segments with length ideally equal to their diameter partially by the friction force on the milled plate which gives a rolling motion and partially by the intergranular collision and friction of the moving mass. Figure II depicts the profiles of the moving mass. The doughnut mass formed by the extrudate appears to be twisting like a woven rope. This characteristic disposition of the material resulted from centrifugal force of the spinning plate and the friction force between material and the milled surface. Particles are therefore pushed toward the periphery of the plate where the residual momentum causes them to rise up the stationary wall and then fall within or over the mass of particles as the momentum dissipates. Accelerating and decelerating particles within the mass form a pattern of velocity gradients which results in the woven rope-like formation. A smooth spinning plate does not allow the extrudate to roll over the surface but just to slide to the periphery of the plate. The characteristics of the movement would be different and, therefore, the final shape of the product will not be as uniform and as spherical as desired.

The typical variables of spheronization are: 1) physico-chemical properties of extrudates, 2) quantity of extrudates, 3) speed of the spinning plate, 4) spinning retention time, 5) plate surface configuration, and 6) size of spheronizer. To understand and to properly manipulate these variables is the key to the success of the operation.

C. Fluid Bed Dryer

Spheronization creates small and uniform spheres that are inherently suitable for drying in a fluid bed drying (FBD) process. The basic structure of FBD is shown in Figure III. Heated air is blown into a dispersion chamber below a solid bed. As the velocity of the air flowing upward through the bed is increased, a point is reached where the upward force generated by it, equals the weight of the material in the bed. Any further increase in air flow rate will

enhance the suspension of the particles in the fluid stream. This phenomenon is termed "fluidization". The velocity of the air at which the solid bed starts fluidizing is called velocity for incipient fluidization. The velocity of the air can be increased further within the region of fluidization, however, too high a velocity beyond the region may cause aggregative (or bubbling) fluidization. Further fluidization beyond this region will result in a phenomenon, called pneumatic transport.

A typical drying curve of FBD process can easily be divided into three phases by the fluidizing bed temperature profile. In Phase 1, the temperature of the solid mass is coming up to equilibrium with the dryer atmosphere. In Phase 2, the mass is essentially at the wet-bulb temperature of the dryer air. The rate of evaporation is at a steady-state in this drying phase. During Phase 3, the mass is drying below the critical moisture content with no free surface water remains. The rate of evaporation is decaying and the mass is in the falling drying rate phase. There is a rule of thumb that a desirable moisture content of around 10% can be obtained by terminating the drying process at the temperature 20 degress centigrade above the wet bulb temperature.

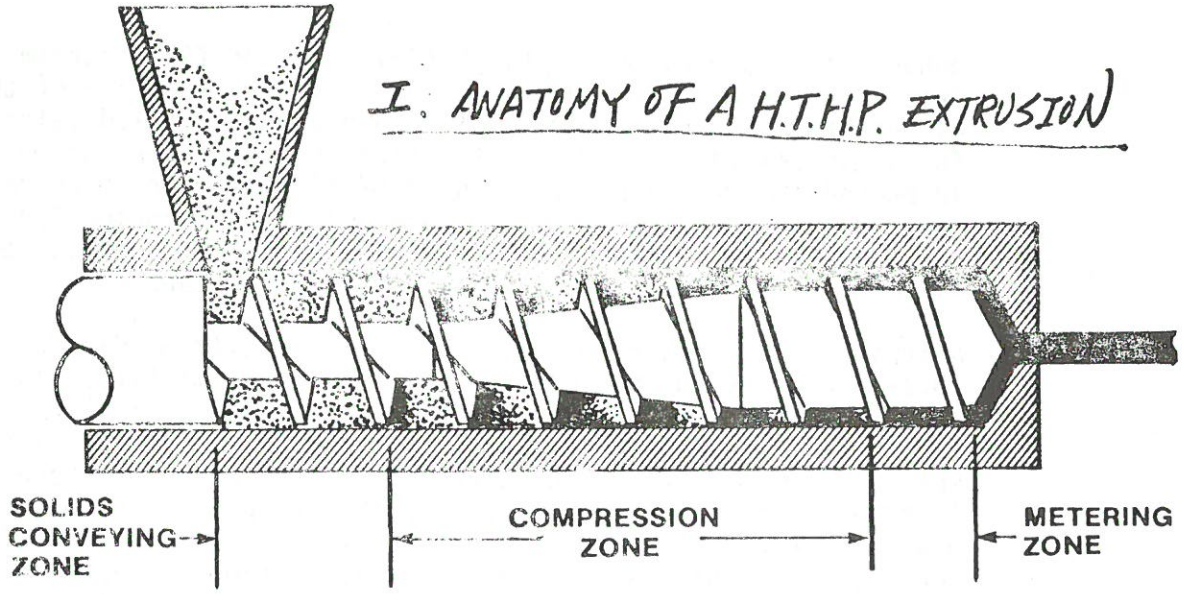
The basic principles described in the aforementioned sections are very powerful for various applications once you know how to apply these principles to your developing processes or products.

Y. C. Jao

April 27, 1982

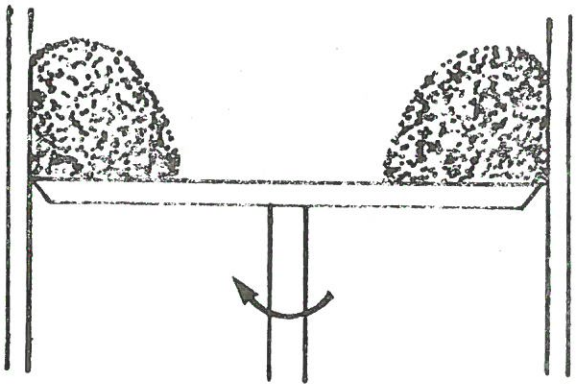
YCJ
4/25/82

I. ANATOMY OF A H.T.H.P. EXTRUSION



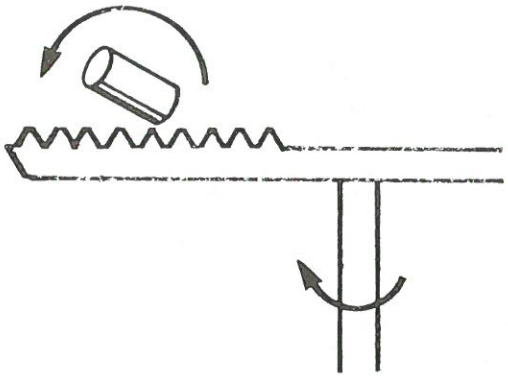
II. ANATOMY OF SPHERONIZATION PROCESS

①



Cross section of Material
in Spheronizer

②



Movement of Pellets
on Milled Spinning Plate

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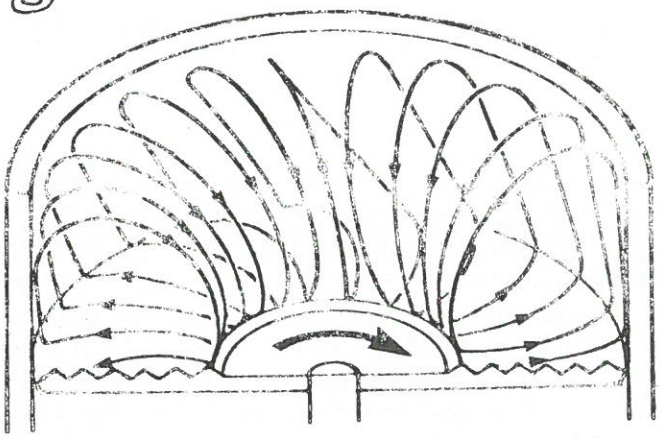
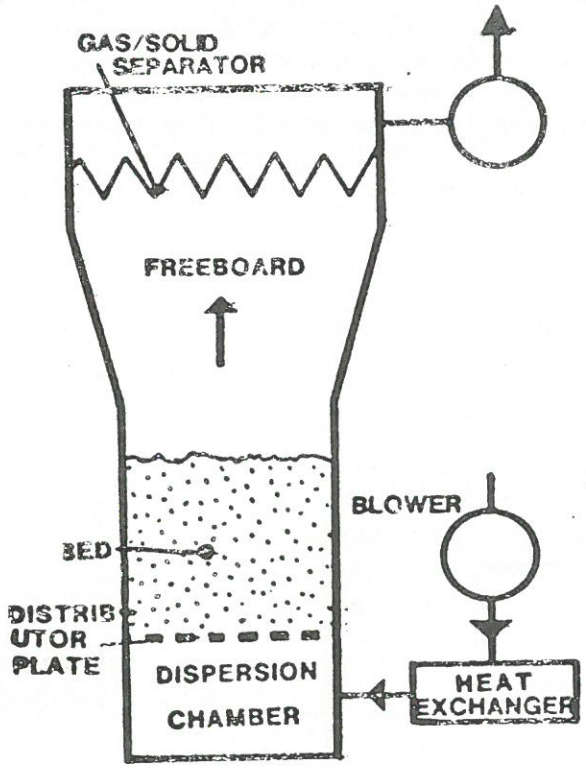
③



Shape of
Moving Mass in A
Spheronizer

III. ANATOMY OF A F.B.D.



THOUGHTS ON THE USE OF FOOD ENZYMES IN PROCESSING

By J.J. Jen

I. Food Enzymology

There are at least two kinds of definitions for the term "food enzymes". Some prefer to include any enzyme one can find in any raw materials, others prefer to limit the scope to only those enzymes that we intentionally add to food products either before or during the processing or the enzymes exist in foods indigenously but can be manipulated by processing parameters to enhance the quality attributes of the products. Food enzymes are important in food technology because foods are initially made by enzymes through synthesis as tissues of the raw materials and because enzymes have specificities that they can catalyze specific reactions so as to produce or to stop the production of specific compounds advantageous to processed products.

Fermentation is the oldest form of use of food enzymes in food processing. It generally uses whole cells and therefore involves a multi-enzyme system. What I want to deal with here is single enzyme systems - the protease, amylase, lipase, etc.

Papain is a protease used in beer chill proofing. Rennet is a protease used in cheese manufacturing. The use of pectic enzymes to clarify fruit juices started in the 1930's and is still in use today. However, among all the enzymes which exist in the raw materials, only a few are used in large scale in commercial food processing. In addition to engineering scale-up problems, the high cost of enzymes and delicate handling requirements often render the use of food enzymes in processing economically unfeasible. Nevertheless, as the energy cost of processing keeps on increasing and the consumer demand of higher quality food products continues to exist, the future of food enzymology is better today than ever in the past. Food enzymologists should take this opportunity and work together with product development engineers to expand the use of enzymes in food technology.

II. Existing Use of Enzymes in Foods

It is not my intention to list all enzyme applications in processing here. Some examples are as follows:

A) Pectinases: Juice manufacturing
B) Proteases: Cheese manufacturing
C) Amylases: Baking industry
D) Glucose isomerases: Syrup industry
E) Glucose oxidase/catalase: Miscellaneous applications

Detailed information on each application can easily be found in any food enzymology textbook or by a phone call to one of the major enzyme manufacturers.

The fact is, aside from the use of glucose isomerase to produce high fructose corn syrup, most of the applications of food enzymes were developed many years ago. There seems to be plenty of opportunities to use enzymes in line extensions. Pectinases can be used to manipulate texture, in particular viscosity, of products. Amylases and other carbohydrases are related to sugar content as well as texture of foods. Proteases can be used to change functionalities of products. Glucose oxidase systems can be used to control browning reactions.

III. Advantages and Disadvantages of Enzymes

To decide whether enzyme is suitable for a particular application, it is best to first examine the good and bad points of the use of enzymes in food technology.

Advantages:

A) Operates at ambient temperatures.
B) Operates in aqueous solution.
C) Operates at neutral or physiological pH.
D) Enzymes have a very high specificity.
E) Requires low concentrations to produce the desired effect.
F) Usually produces a comparatively rapid reaction.
G) Usually has a low level of toxicity to mammals.

Disadvantages:

A) Enzymes are difficult to prepare and expensive especially in pure form.
B) Enzymes are sensitive and unstable molecules and require a degree of care and expertise in their use.
C) Operates best in dilute solutions.
D) Enzymes lost activity in extreme pH or temperature.

IV. Criteria of Food Enzymes for Commercial Applications

Many factors should be considered in attempting an application of enzymes in food technology. However, the following four points are probably the most important ones:

A) Availability: Is the enzyme easily available from a commercial enzyme producer?
B) Stability: How stable is the preparation? How much loss of activity upon storage?
C) Applicability: Can the enzyme be used in existing processing conditions? HOw long a holding time is needed?
D) Economical Feasibility: How much would the enzyme add to the cost?

If satisfactory answers can be found for the above questions, there is a good chance the application is possible.

V. Potential Uses of Enzymes in Foods

It seems that the next big use of food enzyme in processed foods will be lactase in milk products. The enzyme was studied extensively in the last 10-15 years and has been immobilized on many different matrix. The problem seems to be the impurities in the lactase preparation. The low-lactose milk already on the market is produced by batch process. One of the potential uses of enzyme related to lactase application is the sweetness of a product. Invertase-type of enzyme should make a rather big contribution here in the future. At one time, people were hot with cellulase applications but found many problems. Not only can one think of the use of papers to make glucose and alcohols but cellulases should be able to be used to manipulate the texture of processed foods. More recently, better cellulases that are able to attack crystalline cellulose molecules are available commercially. Couple with the use of pectinases and hemicellulases, we can see a lot of potentials in the systems. The use of proteases to change the functionalities of soy proteins has been studied by many people. Some studies on the use of proteases in blood proteins has been published. Can we use proteases in other things such as waste materials, to generate flavors in hydrolysates, to upgrade nutrition claims, etc.? The answer is yes if you can let your imagination fly.

I have not talked about manipulation of indigenous enzymes in raw materials to achieve better quality products. The use of catechol oxidase in tea manufacturing is an example. The control of amylase and reducing sugar in potatoes by storage temperature which in turn controls the degree of browning is another example. However, the subject is of interest to postharvest physiologists but not to food technologists.

VI. Conclusion

Cautions have been mentioned in this article for applications of food enzymes in food technology. However, with careful guarded research and development effort, it is possible to have big breakthroughs in the near future. It takes expertise, cooperation and dedicated hard work to achieve such a goal. On the other end, some line extension projects can easily be done by using enzymes in current processing procedures. The question there is purely economic feasibility.

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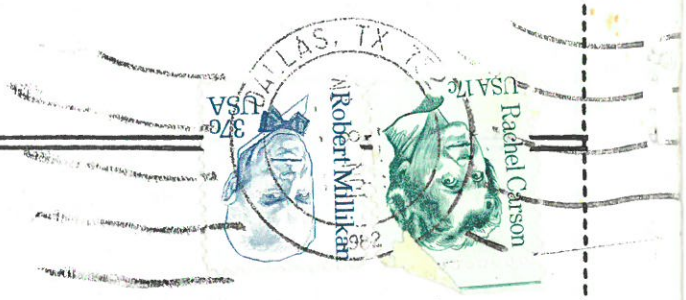

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