

# “NEWSPRINT FROM BAGASSE —A REVIEW”

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‘NEWSPRINT’ is a paper generally used in printing newspapers and the conventional furnish consists of mechanical pulp (coniferous wood) and chemical pulp (coniferous wood) (Either strong unbleached sulfite or semi-bleached sulfate) in the percentage 80 : 20 or 90 : 10 and the paper conforming to certain specific limits as to weight, caliper, finish, printability, ash content, degree of sizing, percentage of chemical pulp content and the dimensions of the sheets or rolls in which form it is shipped. Because of unceasing research, development, technological breakthroughs and innovations, today we find newsprint in the market having furnish components which are little unconventional because of hardwoods and other raw materials having appeared on the scene. Following table gives an account of world’s various newsprint furnishes :—

According to Japanese experiences a reasonably good newsprint can be produced using upto 48% chemi-mechanical pulp prepared from mixed hardwoods.

Mr. Henry, R. W. in his paper “Cold Caustic Soda Pulp in newsprint manufacture” (Pulp/Paper prospects in Asia and the Far East conference 17-31 October, 1960) points out that the practical upper limit of cold soda pulp with any mixed furnish would appear to be between 30 to 40%. At a 20% cold soda pulp content the opacity decreases to a small degree and this effect becomes increasingly important and pronounced with further in-

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crease in cold soda content. However, all other characteristics of the newsprint including printability and ink-absorption remain satisfactory.

Addition of upto 10% of cold soda pulp to the furnish produces no appreciable effect on the machine running characteristics or newsprint properties in-

Sr. NEWSPRINT Mill-Location No.	FURNISH
1. The National Newsprint & Paper Mills Ltd., Nepanagar, M.P.	<i>Present</i> : 58% groundwood (stone) (Hardwood) salai and 42% sulfate chemical (Bamboo). <i>Future</i> : **34% Groundwood (Salai)—33% cold soda (salai)—33% chemical (Bamboo). 60% groundwood (stone) Gewa, 30% chemi-groundwood (Gewa) and 10% imported sulfite (Bld.) 75% groundwood—25% sulfite.
2. Khulna Newsprint Mills Ltd., Khulna Pakistan (East).	75-80% groundwood, 20-25% Chemical pulp.
3. Consolidated Paper Corp., Grand' Mere, Que., Canada.	58% groundwood, 30% chemi-groundwood; 12% chemical (Sulfite).
4. B.C. Forest Products Ltd., Crofton-B.C. Canada.	75% groundwood, 15.5% magnefite, 9.5% kraft (Semi-bleached)
5. Great Northern Paper Co., East Millinocket, USA.	75% groundwood, 25% chemical.
6. Great Lakes Paper Co., Fort William, Ont., Canada.	62% groundwood (Eucalyptus), 20% cold soda pulp (Eucalypt)
7. Bowaters Southern Paper Corp., Calboun, Tenn. USA.	18% kraft (semi-bleached, imported pinus radiata.)
8. Australian Newsprint Mills Ltd., Tasmania, Boyer, Australia.	35% groundwood (Pine), 35% chemi-mechanical (Eucalypt) 20% sulfite, 10% broke.
9. Industries Klabindos Parana de cellulose S.A., Brazil.	75% groundwood—25% kraft.
10. Tasman Pulp and Paper Co., Ltd. Kawerau, N. Zealand.	28-35% Chemi-mechanical 51-55% groundwood (softwood)-14-17% sulfite (High yield).
11. Jujo Paper Co. Ltd., 5-1 Oji, Kita-ku. Tokyo-Japan	13% semi-chemical, 12% sulfite 75% groundwood.
12. Kruger Pulp, Paper Ltd., Montreal, 3, Que, Canada.	

\* The writer feels that incorporation of “Cold Soda Pulp” beyond a percentage of 28-30% in the newsprint furnish will go to affect the final “Opacity” as the ligno-cellulosic fibres when subjected to any kind of

treatment with chemicals, however mild, the treatment may be rapidly lose their opacity—an important characteristic of newsprint and mechanical printings.

cluding brightness. Above 30% problems of drainage on the fourdrinier machine wire, formation, and sheet shrinkage become increasingly important and the finished sheet begins to lose the normal newsprint characteristics.

Manufacture of paper and newsprint from bagasse has been the subject of research and development and discussion all round the world in the Pulp and Paper Mills R/D centres, research laboratories with the result that today we are having quite a big number of bagasse-based paper mills and the number is increasing day by day. These mills are operating quite successfully and are a very big relief to the fast depleting and dwindling forests and forest resources and increasing paper and newsprint demand. Most of the pulp, paper and newsprint industry has depended all these years on softwoods which have been very heavily taxed and now the hardwoods have also come to occupy an important place and their use is getting a very rapid acceleration. Bagasse is a cheap source of cellulosic fiber and has become a very prominent raw material and shall be playing a great role in the years ahead as far as its contribution to pulp and paper making is concerned. It is being burnt in the boilers in the sugar mills as it is a very cheap fuel for them and alternate fuel shall have to be supplied if bagasse has to be spared for paper industry. With ever increasing trend of sugar production throughout the world more of bagasse is expected to be available as surplus.

Till now only one newsprint mill based on bagasse *Tecnica cubana S.A. cardenas*, Cuba could come up. This is producing newsprint from 100% bagasse and claims to be utilizing pith also and went in production in mid 1958. Joaquin de La Roza Sr. was the builder and brain behind this mill. The bagasse newsprint matches very well with the wood-pulp newsprint with brightne 78 G.E. as compared to 69 G.E. of the normal newsprint.

Mr. de La Roza ,Sr. the inventor of the process was a very well known figure and was a graduate in mechanical engineering, studied chemistry in his spare time and worked on the perfection of his process for more than 30 years in U.S.A. Mexico, Peru and other cane countries. The mill is producing 100 tpd of newsprint and the trial run of first saleable newsprint (100% Bagasse) made in a Cuban newspaper "El-Pais" was quite satisfactory at their high speed presses without any changes mechanical or technical. The writer had been in correspondence with Mr. de La Roza who now no more with us sent to him the various letters and the 100% bagasse newsprint and also wood-pulp newsprint samples.

The sheet of 100% bagasse newsprint was actually whiter than the groundwood pulp newsprint and this whiteness made one American newspaper remark "if it were possible to yellow the sheet a bit because American newspaper readers were accustomed to a less white paper in their daily newspaper".

No other bagasse-based newsprint mills have come up in the world and why Mr. de La Roza's method has not been adopted for putting more bagasse-based newsprint mills really surprises the writer.

I feel the hesitancy for putting up bagasse-based newsprint mills might have been due to the fear

that bagasse newsprint might or would lack printing, opacity and ink absorption and other characteristics and may suffer from show-thru and print-thru. Various furnishes for bagasse newsprint have cropped up or appeared in the market or on the scene and here are the few claiming to overcome the shortcomings feared to be inherent in the bagasse newsprint :—

(A.) Dr. W.G. Meyer and Dr. J.T. Henderson (Crown Zellerbach Corp., U.S.A.) recommend the use of ground bagasse (50-60%) with soda bagasse pulp or bleached kraft (40-50%) for making good newsprint with qualities falling well within commercial specifications and further say that ground bagasse pulp has good drainage characteristics, is an excellent opacifying agent and would give high printability.

They also recommend using softwood HCR kraft with ground bagasse with the resultant furnish giving good newsprint with good pressroom runnability and good printing characteristics and contend that this would be economical in many areas.

(B.) K M W'S in their release "Newsprint from bagasse" claim to have manufactured newsprint by using chemical bagasse and mechanical bagasse pulps especially in close collaboration with A.B. Defibrator Stockholm, Sweden and the pulps have the following properties .—

	Chemical Pulp (Bagasse)	Mechanical Pulp (Bagasse)
Beating degree SR	39	61
Bulk ml/g	—	3.1
Burst factor	75	—
Breaking length m	8900	1800—2000
Tear factor	70	17—18

**Chemical Bagasse Pulp** was produced by the sulfite method in a Kamyr continuous digester. As bagasse is a short-fibred raw material and gives a chemical pulp with lower strength properties than those made from coniferous species and so the % of bagasse chemical pulp component in the newsprint furnish would have to be raised if it were to substitute the coniferous pulp (unbleached sulfite or semibleached sulfite or semibleached sulfate.)

**Mechanical Bagasse pulp** was produced in a disc refiner and is a powdery fibrous material and imparts high opacity to the finished paper, has good drainage characteristics and gives a sheet with good printability, utilization of pith is also possible as in disk refiners pith when treated has good drainage properties and a very high opacity.

It is claimed that the newsprint produced from bagasse was tested for printing not only in the laboratory but also in collaboration with Dagens Nyheter, Sweden's largest daily newspaper, on newly installed high speed printing presses with output of 45,000-50,000 copies per hour.

Besides a careful design of the wet-end and the press of the paper machine is suggested for attaining a requisite wet strength especially in the use of bagasse for newsprint and while economical production on the paper machine is desired. The use of KMW uni-press is suggested for guaranteeing a smoother and trouble free run on a fast paper machine.

KMW'S further claim because of laboratory tests and large scale mill runs that newsprint sheet suitable for high speed machine operation can be produced from a mixture of semi-bleached bagasse and long fibred groundwood pulp (40-60%) and a part of the latter can be replaced with mechanical bagasse pulp

thereby making a total bagasse pulp content of 75-80%.

(C.) **Mr. A. Sundelin** (Consulting Engineer-Sweden) recommends the use of minimum of 40% imported pulp along with sulfate bagasse in a proposed newsprint mill with an annual output of 100,000 tpy to be built at kous (Cus) in upper Egypt and adds further that for the failures in the successful production of bagasse newsprint the reasons are technical as well as economical and good quality newsprint can be manufactured on high speed paper machines using furnishes of 50-70% coniferous groundwood (newsgrade) and the balance chemical (sulfate) bagasse pulp.

(D) **Mr. Napier, L.M.** (Simon Handling Engineers Ltd., stock port, London, U.K.) recommends Dr. D.S. Cusi's process for the manufacture of newsprint from bagasse using blend of semi-mechanical bagasse pulp with 5% of the softwood kraft, with the resultant newsprint having the following characteristics which are the normal characteristics of standard newsprint:—

Basis Weight.....54 Gms./m<sup>2</sup>  
 Brightness .....60°G.E.  
 Opacity .....88  
 Tear C.M.D.....30 gm

On Nov. 19, 1965 another variation of newsprint furnish with 75% semi-mechanical bagasse pulp 15% groundwood pulp and 10% semi-bleached

kraft wood-pulp was tried at Southland Paper Mills, Lufkin Texas, U.S.A. on a large/modern high speed No.3-195" trim newsprint machine. No difficulty was experienced even at speed of 1700-1750 fpm and even when chemical pulp (Kraft) had been completely cut the run was break-free which is really a very significant/notable feature. The newsprint had the following characteristics and was of excellent quality:—

# **PRESSROOM PEOPLE'S COMMENTS ABOUT BAGASSE NEWSPRINT.**

**Lufkin News** :— According to Mr. D. Hollers the bagasse newsprint sheet demonstrated good running strength and printing qualities. Ink strike-thru and show-thru was possibly less than standard news and during the bagasse run the ink application was actually reduced as the sheet seemed to be requiring less ink.

**South west colour printing Co.** Mr. L. N. Cahill says that the RUNNING strength of bagasse newsprint was good as a flying paster was made without slowing down and the roll went thru without a break. The ink application was unchanged intentionally and that the sheet acted as if it were thin although they found the caliper to be normal. The second roll ran as strongly as the first and more ink was added to improve the weak impression. Extra ink did not change the weak picture but added to the

BAGASSE NEWSPRINT		STANDARD SOUTHLAND NEWSPRINT*
No.		
1.	Basis Weight.....54 gms/m <sup>2</sup>	52 gms/m <sup>2</sup>
2.	Mullen Burst.....0.8 kg/cm <sup>2</sup>	0.626
3.	Tear (Elmendorf) M.D. 25.2 C.D. 30.5	22.0 32.0
4.	Brightness 62°GE	58°GE
5.	Opacity 90.5	90.0

\* Southland Newsprint furnish consists of Groundwood and Semi-bleached kraft.

smear problem. The sheet acted dense to ink penetration at the surface.

...*San Antonio Express*: Mr. H. Kilgore after having run full size three rolls on the Evening News (Edition Dec. 13) commented that the sheet ran on the press without a break at 60,000 copies/hour and the sheet characteristics were the same as standard Newsprint.

No change was made in ink application and there was no excessive show-thru or strike-thru.

Dr. Cusi's process is notable in many respects because of lesser and reasonable cost, lower chemical and power consumption, higher yield and not involving any question of sulfur in the production of semi-mechanical pulp and subsequent technical problems of corrosion and scaling.

Mr. Napier is very critical of the suggestions in A and B for bagasse newsprint manufacture and makes clear very many controversial points in his letter to the editor\* (Pulp and Paper International—Feb. 1966 p. 76, 78)\*\* "Newsprint from Bagasse—another viewpoint." "Crown Zellerbach" process involves mechanical grinding of depithed bagasse into fine powder or flour and then blending with softwood kraft pulp. Crown Zellerbach's newsprint samples exhibited at Cairo fair (Aug. 1964) were analysed by 3 laboratories and Mr. Napier confirms that those had excellent opacity but tear values CMD were between 19-22 below the minimum guide value of 24 grams decided and recommended at the Cairo conference and this was despite the fact of a kraft content as high as 35% as indicated by the gravimetric analysis.

Besides the technical objections in the "Crown Zellerbach" process there are economic objections too—the most predo-

minent being cheapness of production and it is here where the process fails as it depends on the continued import of expensive kraft-soft-wood and also expensive mechanical grinding of completely depithed bagasse involving higher power consumption associated with heavy refiner discs wear.

Mr. Napier further goes to criticize even Mr. Sundelin's suggestion of using chemical bagasse pulp along with conventional groundwood in the percentage 50:50 as the tear factor of the furnish is 40% higher than that obtained by KMW for Laboratory sheets and 1000 higher than that for paper machine runs as is clear from the following table latter figure being equivalent to a CMD tear of 18.72 grams which is well below the minimum guide value of 24 grams recommended by experts at Cairo conference.

He further contends that if chemical bagasse and groundwood mixtures have not sufficient strength for newsprint then chemical bagasse and mechanically ground bagasse mixtures would still be less suitable as ground bagasse is almost a powder with no strength properties and is simply a filler in the newsprint. Therefore the recommendation of replacing gradually groundwood in the newsprint furnish with mechanical bagasse pulp (i.e. bagasse flour) has no technical foundation and Mr. Napier, decries its use.

(E.) \*\**Aschaffenburg Process*:—This process for the manufacture of Bagasse newsprint employs neutral sulfite process and prefers it over alkaline process because of following counts:—over comes the difficulties caused by the homogeneity-lack in the material

- gives brighter pulps
- require few chemicals
- gives higher yields
- is more flexible and adaptable to the end pulp quality (promising different qualities of paper varying in strength, opacity and softness.)
- avoids any hydrolysis and gives higher yield and pulp qualities of a higher degree of polymerisation. This count makes the neutral sulfite process the best and the most suitable for making newsprint from bagasse.

(A carefully regulated prehydrolysis makes it possible to adapt the pulp character/qualities comparable with these of semichemical pulp.)

A pretreatment method Ritter's (Biological Depithing) is recommended which reduces the losses and wastes to 3-4% which are otherwise 17-19% in normal depithing and prehydrolysis (The freeing of pentosans). The vegetal is about 30% more digestible. Monosulfite cooking is employed and cooking tempera-

** Characteristics	Sundelin Quoting KMW	KMW Laboratory sheets.	KMW Paper Machine runs.
Breaking length (meters)	4130	3900	3900-2000
Burst Factor	21.5	17.03	11—13
Tear Factor	64.8	47.1	30—36

tures are in the range-150-160°-C Sodium, Sulfite percentage is between 8-16 of the absolute dry weight of bagasse with 2% of additional sodium for buffering. Yields vary between 55% to 68% and for a well prepared and cooked pulp the yield would be about 60%. A higher figure would mean almost semi-chemical pulp qualities and 68% yield corresponding to the limit of technical defibration. For digestion continuous digesters of the well known and successful systems are provided for.

"Ritter Process" consisting of biological treatment loosens the pith from the fibres opening up the incrustations between the fibre bundles facilitating thereby greatly the subsequent penetration of chemicals and improves the burst, strength and folding values of paper irrespective of the age of bagasse in the stack. The pretreated bagasse is of higher quality, better brightness, higher degree of freeness permitting higher, better paper machine speeds. This process also eliminates all danger from Bagassosis the deadly pulmonary disease which attacks workers breathing the dust while debaling bagasse, and serious menace of fire hazard there in the old-fashioned dry stacking method and avoids costly separate stacking methods, fire fighting machines and fire insurance premiums. Pulp samples made from Bagasse biologically treated are much cleaner, softer and have a lower degree of shrinkage.

Dr. Theodor Hopner (Head, Zentral Laboratorium, Aschaffenburg Zellstoffwerke A. G. Aschaffenburg, Germany-West) in a report on trials with the Ritter Process states that, "in cooking as well as in bleaching chemicals, from 10-20% can be saved by this process and further claims that some classes of printing paper can be produced without any bleaching or at most needing only a 1% chlorine touching up".

Ritter Bagasse Process is being used at Ngoye Paper Mills, Felixton, Zululand, Africa (South) for the last 11 years since 1956, Ledesma Sugar Mill, Argentina (for pulp production for writing, printing paper), Refinadora Panlista, Piracicabo, Brazil (for writing/printing paper) and Piet Retief Paper Mill, Africa (South).

The following Table No. 1 compares Bagasse neutral sulfite, Bagasse sulfate and spruce sulfite :—

From the above table it is apparent that spruce sulfite is superior to bagasse pulp in tearing strength, breaking length and folding endurance. Taking into account the qualities of groundwood pulp, one can dare say that neutral sulfite bagasse pulp is not inferior in any way in quality to the conventional mixture of groundwood and spruce sulfite.

Initial wet strength of bagasse neutral sulfite is also quite good it is this figure which governs the machine speed and insufficient

wet strength imposes limit on the speed.

**Table No. 2** Compares bagasse newsprint with standard newsprint and shows that bagasse newsprint is superior, in breaking length and folding endurance.

**Table No. 3** gives test data in regard to bagasse newsprint made at Miesbach Mill "Aschzell" without bleaching from 100% bagasse in 1955 and this newsprint was made on a machine running at 200 m/mt. The wet strength of the pulp was 90 g/30 mm at 40 °SR which could permit still higher speeds unavailable at the paper machine at that time.

Tensile strength of newsprint averaged 2500 m as against 1,800 m of newsprint used in German, and meeting the requirements of the modern high speed rotary printing presses.

Newsprint was printed at about 15,000 imprints/hour on the rotary press and the print was of good quality.

Brightness of newsprint was 56% without bleaching in 1955 but Ritter process which is expected to be used would certainly have a positive effect on the whiteness.

"Aschzell" feels that with their process it is possible to produce from chemical pulp of bagasse a newsprint quality with the required and desired physical properties and at competitive costs too.

**Table No. 1**

No.	Properties	Bagasse neutral sulfite	Bagasse sulfate	Spruce Sulfite
1.	S.R.°	70	70	45
2.	Bursting strength	35	30	60
3.	Tearing strength	135	100	150
4.	Breaking length	1,000	7,000 m	8,500 m
5.	Folding endurance	2,000 m	1,500	4,000
6.	Initial wet strength	90	45	120
7.	Whiteness (%)	54	33	64

...(1) The Aschaffenburg Process of Manufacturing Newsprint from bagasse (Mr. Rudolf Scheop-Pulp and Paper Prospects in Latin America-U.N.; FAO. 1955; P-390-392).

(2) Production of Newsprint from Bagasse- (Aschaffenburg Zellstoffwerke A.G., Redenfelden, FRG-Pulp/ Paper Prospects in Asia and the far East, U.N. FAO Oct. 1960-P. 502-504)

Table No. 2

No.			Bagasse Newsprint	Standard Newsprint (Spruce)
1.	Breaking length... m	M.D.	3810	2570
		C.D.	1670	1400
		A.V.	2740	1985
2.	Folding =	M.D.	17	8
	endurance	C.D.	4	2
		A.V.	11	5
3.	Whiteness		56	59

Copies of this newspaper had been stored for 5 years in normal circumstances with air access and the discoloration which had affected the whiteness of paper was of course inevitable.

Recovery of chemicals from the monosulfite digestion liquor is also feasible because of Babcock and Wilcox having many successfully designed systems which can be used now. This would solve the sewage problem and reduce the consumption of chemicals.

(F.) *Defibrator AB, Stockholm, Sweden*:—Pioneers in the thermo-mechanical pulping process have conducted detailed studies on bagasse besides other raw materials. This new pulping process is being used very successfully at various mills—the maiden installation at Rockhammar Bruks AB; Sällinge, Sweden having initially a capacity of 180,000 tpd to be raised to 250,000 tpd ultimately and the mill having gone on stream during November 1968 and the second at Papeteries de France, Lancey, Nr. Grenoble, France with a capacity of 60 tpd going on stream in 1970.

Thermo-machanical pulping process consists of steaming the raw material at elevated temperature and pressure before defibration at the same temperature and pressure and there-after subjecting to 2 stage conventional refining and gives an improved mechanical pulp suitable for

printing grade, board, magazine and newsprint. Bagasse used for the thermo-mechanical pulping studies had been got from south of Spain. The strength characteristics of the mechanical bagasse pulp at a freeness of 120 csf are:

Burst Factor—15  
Tear Factor—42  
Breaking length—3000 m

At pulp and paper Development in Africa and Near East Conference at Cairo (United Nations, F.A.O. 8-18 March 1965) it was said that mechanical pulp from bagasse was only suitable as a filler but that has now to be reviewed and revised in view of the researches done by Defibrator AB; which have opened new possibilities rather new vistas in the manufacture of newsprint from bagasse.

*The cost of bagasse newsprint is indicated to be Rs. 299.50 per tonne.*

Table No. 3

1	Basis weight	56g/m <sup>2</sup>
2	Bulk weight	
3	Thickness	0.143 g/cm <sup>2</sup>
4	Bursting strength	0.080mm
		0.40kg/cm
5	Bursting surface	7.10 m
6	Tensile strength	average 2500.m
7	Fold endurance	average 6
8	Tear resistance (Brecht-Imst)	average 43 cmg/cm
9	Ash (bone dry)	16.6%
10	Opacity	0.97
11	Smoothness	20.8 sec.
	(Bekk)	Page a 16.6 sec.
		Page b

(G.) *Writer's Suggestion.* The writer feels and recommends the use of "Deinked News" along with Bagasse chemical pulp for news print manufacture, the deinked news serving as the groundwood component of the normal wood pulp newsprint and be setting to naught all the various objections, short-comings and speculations. This furnish deinked news and bagasse chemical pulp, though news and novel and never used in the history of newsprint manufacture would be the most befitting one especially for those countries which are faced with chronic and all time newsprint shortage and are having lot of bagasse available. One most notable feature of this furnish-based newsprint mill is that it dispenses with completely the need of wood-lands (softwood or hardwood), costly wood inventories, supply of pulpwood and costly mechanical pulping and allied equipment.

Chemical or semi-chemical pulping of bagasse are today very well established processes and the resultant pulps are being used in fairly large quantities alone or in blends with other fibres for the manufacture of fine, wrapping, tissues, corrugating medium and others.\* In a report "Deinking; Is it a delight or delima" (Mr. E. Gantzhorn pulp and Paper (U.S.A.) Jan. 23, 1967, P.19) of a special survey, deinking has been found to be an economic and

quality production aid and following are the remarks which go to corroborate 100% the Deinked news/bagasse chemical newsprint furnish for future newsprint mills as advanced by the writer :—

"At mill No. 4 a spokesman says deinked pulp is a perfect replacement for groundwood, which is becoming expensive due to the high cost of wood, grinding labor and obsolescence of the groundwood mill.

#### **ADVANTAGES WHICH DEINKED NEWS WOULD GIVE :—**

Would be cheaper than virgin pulp—groundwood pulp prices being very high and give rupee/dollar economy.

Would require practically little or no power while refining for making a good sheet.

Would require less of fillers and give improved opacity.

Would impart softness for color or uniformity, low sensitivity to moisture and give better dimensional stability, improved better printability, strength, versatility and improved freeness to the finished or end product. i.e. newsprint.

Deinking of news is nothing new and is being done in many countries—Sweden, Seoul, Holland, Japan, Germany. (where it forms 15-25% of the newsprint furnish) and U.S.A.

*Garden State Paper Co., Garfield, N.J., U.S.A., is the first rather the leader/pioneer in having made newsprint from 130% deinked stock (News). This firm has a highly developed process in which unusual chemicals figure prominently. The initial production of the mill was 100 tpd which was raised to 204 tpd and an ambitious/large scale expansion subsequently raised the production to 408 tpd. This was all possible because of remarkable success and wonderful results of*

the "Scudder process" of deinking news which also spurred the putting up of another deinked newsprint mill with 80,000 tpy capacity which marks the 3rd phase of expansion and this mill went into production in early 1967. Only sometime afterwards Field Enterprises Inc.; Chicago announced the plans for putting up a Deinked newsprint mill with 80,000 tpy capacity using the same scudder process at Alsip, Illinois which went into production in early 1968. Ground for the construction of this was broken on January 10 and this mill actually marked a 4th phase in the expansion of Garden State deinking process which gives a very optimistic view of deinking of especially news.

According to Mr. R.B.Scudder President, Garden State Paper Co., both the plants using the same process of deinking are operating satisfactorily.

The price of the deinked newsprint is lower than that of the standard or normal newsprint i.e. \$ 120-134 as compared to \$ 151-152 the present price per tonne. The quality of the deinked newsprint is fine and matches very well with the American and Canadian newsprint. About 10% of deinked newsprint is being consumed by Newark News and the rest is being shipped to over 40 customers. The customers are quite satisfied with the deinked newsprint quality. The growing importance of news deinking and acceptance of deinked newsprint can be very well gauged by the trial salvage drive and the probability of deinking plant, newsprint mill in San-Francisco area. The mill would be costing \$ 15 million, capacity 290 tpd newsprint using 300 tpd of waste newsprint.

#### **AT PULP AND PAPER DEVELOPMENT IN AFRICA AND NEAR EAST CONFERENCE AT CAIRO (ECA/BTAO/FAO.)**

(U.N./8-18 March 1965). The world leading and top pulp/paper

experts met and considered the technical and economic aspects of producing newsprint from bagasse in details. The working party on bagasse newsprint agreed that it would be unwise to attempt to establish very rigid specifications for newsprint of any type, including that made in part or in whole from bagasse and newsprint containing bagasse should fall within the definition of newsprint adopted by FAO at Tokyo meeting which was as follows :—

"Any kind of paper capable of being run through modern printing presses and of producing an acceptable sheet of newspaper at a reasonable cost."

Runnability, opacity and lower cost are the most important and essential qualities and the experts agreed that in general this would come to mean insistence on the following minimum characteristics and also the minimum guide values to which bagasse newsprint should conform :—

Basis Weight\*...52 Gms/M2

Brightness... 50% (MgO = 100%)

Opacity ...86

Tear CMD ...24 gr.

\*The basis weight could for example be lighter than 52 gms/m<sup>2</sup> provided the newsprint retains the other minimum guide values and the same may be said for any of the other guide values suggested.

It is worth mentioning here that considerable quantities of newsprint are produced and internationally traded which, while falling some what short of the above minima, are fully accepted by the consumers since they do possess the desired opacity and runnability.

\*Besides opacity, runnability and lower cost, uniformity of

deliveries and perfect shape of rolls other sheet properties of newsprint which are important are :—

Finish-surface smoothness, porosity, compressibility, brightness, bulk formation, shade, cleanliness, Basis weight.

The working party of experts also agreed upon the following principles respecting the bagasse newsprint composition. :—

■ It should contain the maximum amount of bagasse which is technically feasible and economically justified. (Irrespective of the method of its production) and this may be as high as 65% or more.

■ ■ The most economic sheet-forming materials derived from bagasse should be used as the basic ingredient.

■ ■ ■ No limitations should be established as to the use of sizes, fillers and additions or any other materials which may be necessary and economic for reaching the minimum guide values noted above.

And further added that it is considered impracticable at this stage of their knowledge to indicate more precisely the furnish composition for bagasse newsprint, which may vary within wide limits and can only be established for a particular country or individual mill on the basis of local conditions and economics and may also vary with advancing technology.

The working party also agreed that an analysis of production and capital cost data needed should be carried out with utmost care since no single model would suffice to bring out the differing impacts of the

several cost elements in different countries, taking into account local factors such as influence of length of grinding season on cost of bagasse, cost of power, etc., and further considered that it was important that developing countries with prospects of establishing bagasse-based newsprint production should have available to them besides an affirmation of the technical feasibility of such production, a reasoned appreciation of the economic factors involved.

I feel at such a juncture when the country's population is exploding fast, the figure at present being about 546 million with little chances of its coming down and when the newsprint consumption is shooting up, expected to be 260,000-300,000 by 1975-76 as per National Council of Applied Economic Research Survey, putting up more newsprint mills in the country is very imperative and the dire need of the hour. Three five year plans have already passed but unluckily the country could not see another newsprint mill.

At present we can be jubilant over NEPA's expanding to 250 tpd within 1-1.5 years though expansion has been delayed already, coming up of 200-tpd newsprint mill—softwood-based in Himachal Pradesh (H.P.) by M/s Karam Chand Thapar and Bros./Abitibi Paper Co., Canada, 250-tpd newsprint mill hardwood-based in Kerala and 150-tpd newsprint mill in Bastar (Both under the aegis of the recently formed Hindustan Paper Corporation) a newsprint mill in U.P. and all these be taking not less than 4-5 years or even more for going on stream. Besides these 1 or 2 bagasse-based newsprint mill in

Maharashtra state are in the exploratory stage.

In conclusion putting up a *newsprint mill bagasse chemical pulp and deinked news based* seems to the writer a **WAY AND THE ONLY** way out for solving the most knotty and baffling problem of newsprint from bagasse till now untackled and having baffled the wit and imagination of world pulp and paper scientists and experts all these years. Such a newsprint mill would be a way out for increasing the country's newsprint production, solving the much vexing and perplexing riddle of newsprint crisis, a boon for our country where lot of bagasse and waste newspapers are available and can be easily spared and would besides be a great relief to the heavily taxed forests and scarce foreign exchange which is at present Rs. 14-15 crores annually for the total import of newsprint. Such a new and novel and rather *uncanny furnish-based newsprint mill merits immediate attention of the entrepreneurs and the Govt. with no second thoughts and is a very fine, economic, attractive and timely proposition.*

The writer further expects that the future would see many newsprint mills some softwood-based, some hardwood/bamboo based, some deinked news-based and some bagasse chemical pulp/deinked news-based satisfying the future and ever shooting newsprint needs of the country—the biggest democracy and expected to be one of the biggest newsprint consumer in the years ahead.

#### ACKNOWLEDGEMENT

I would like to thank Shri Hari Singh, I.F.S. Chairman/Managing Director. The National Newsprint & Paper Mills Limited, Napanagar. (M.P.) for permission to publish this paper.