Buku 1

RANGANGAN KEGIATAN BELAJAR MENGAJAR

KERAJINAN KERTAS

Oleh :
Drs. Ramalis Hakim

JURUSAN PENDIDIKAN SENI RUPA DAN KETERAMPILAN KERAJINA
FAKULTAS PENDIDIKAN BAHASA DAN SENI
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PADANG - 1989

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Pokok Bahasan, TIU dan Sub Pokok Bahasan 2

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Matrik 8

IDENTITAS MATA KULIAH

Nama Dosen	: Drs. Ramalis Hakim	
Mata Kuliah	: Kerajinan Kertas	
Nomor Mata Kuliah	: KKR 328	
Program	: D 3	
Semester	: Ganjil (3)	
Jumlah SKS	: 4 (empat)	
Status	: Wajib	
Jumlah Pertemuan	: 16 kali	
Mata Kuliah Persyaratan	: DASAR-DASAR DESAIN	
Evaluasi	: Mid Semester	15 %
	Semester	25 %
	Paper	10 %
	Tugas Praktek	40 %
	Partisipasi	10 %

Sinopsis : Pembekalan pengetahuan dan ke trampilan membuat karya-karya kerajinan kertas Dwi matra dan trimatra dengan teknik melipat, memotong, menggores, menempel, menyambung atau kemungkinan la-in. Latihan diarahkan pada ben da-benda dekorasi yang memiliki nilai estetis dan guna.

POKOK BAHASAN, T I U DAN SUB POKOK BAHASAN

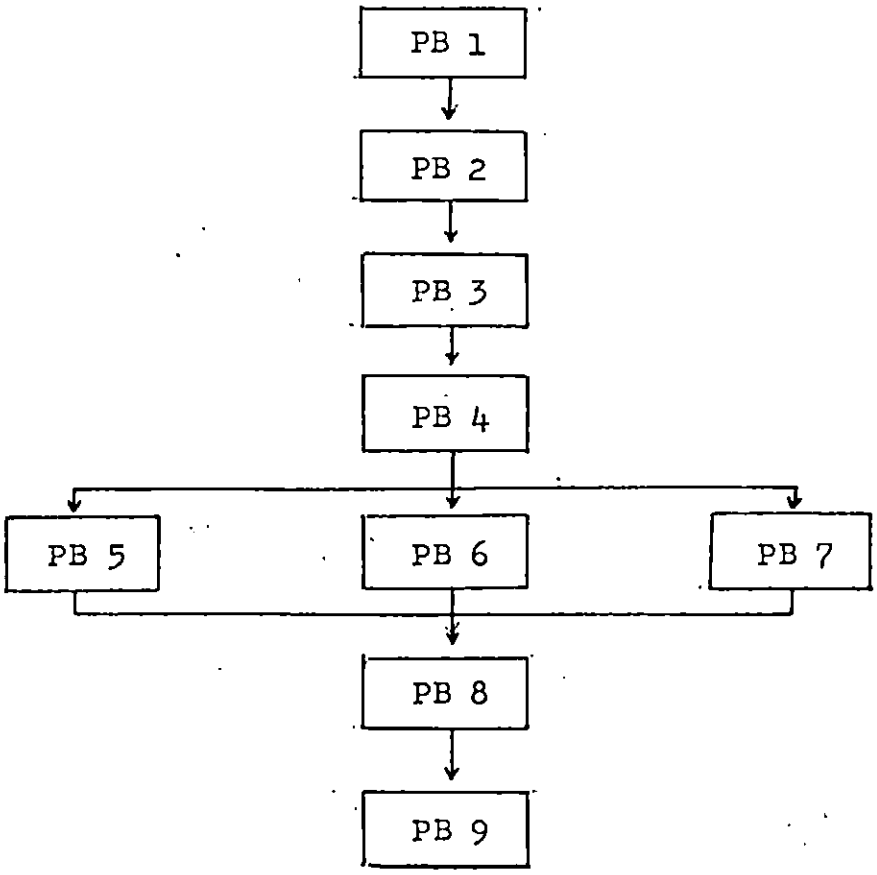
No.	Pokok Bahasan	T I U	Sub Pokok Bahasan
1	2	3	4
1	1. Pengantar kerajinan kertas	Memiliki pengetahuan tentang pengertian, sejarah dan fungsi kerajinan kertas.	1.1. Pengertian kerajinan kertas. 1.2. Sejarah kerajinan kertas. 1.3. Fungsi kerajinan kertas
2	2. Pengetahuan bahan, alat & teknik kerajinan kertas	Memiliki pengetahuan bahan, alat dan teknik kerajinan kertas	2.1. Bahan kerajinan kertas. 2.2. Alat kerajinan kertas. 2.3. Teknik kerajinan kertas
3	3. Teknik Melipat (Folding)	Memilki pengetahuan dan keterampilan teknik melipat untuk membuat kerajinan kertas	3.1. Pengertian melipat. 3.2. Unsur-unsur melipat. 3.3. Prosedur kerja. 3.4. Perencanaan (Desain). 3.5. Penyelesaian.
4	4. Teknik Memotong (Cutting)	Memiliki pengetahuan dan ketrampilan teknik memotong untuk menciptakan karya kerajinan kertas	4.1. Pengertian memotong. 4.2. Unsur-unsur memotong 4.3. Bahan dan alat yang dipakai 4.4. Prosedur kerja 4.5. Perencanaan (desain) 4.6. Penyelesaian
5	5. Teknik Memotong dan mem-	Memiliki pengetahuan dan ketrampilan teknik	5.1. Pengertian memotong dan membuang

1	2	3	4
	buang (cutout)	memotong dan membuang (cutout)	5.2. Unsur-unsur teknik memotong dan membuang (cutout) 5.3. Bahan, alat dan teknik
6	sda	sda	5.4. Disain dengan motif figuratif dan non figuratif 5.5. Langkah-langkah kerja 5.6. Penyelesaian
7	6. Melipat dan memotong (Folding and Cutting	Memiliki pengetahuan dan teknik melipat dan memotong untuk membuat karya kerajinan kertas	6.1. Pengertian melipat dan memotong (Folding and cutting 6.2. Unsur-unsur karya kerajinan kertas dengan teknik melipat dan memotong 6.3. Bahan dan alat serta penggunaannya dalam tehnik melipat dan memotong
8	sda	sda	6.4. Disain bentuk 6.5. Prosedur kerja 6.6. Penyelesaian
9	7. Melipat dan mengerutkan (Folding and Scoring)	Memiliki pengetahuan dan ketrampilan tehnik melipat dan mengerutkan (Folding and Scoring)	7.1. Pengertian melipat dan mengerutkan 7.2. Unsur-unsur teknik melipat dan mengerutkan 7.3. Bahan dan alat u yang digunakan 7.4. Prosedur kerja

1	2	3	4
)	sda	sda	7.5. Disain bentuk 7.6. Tahapan kerja 7.7. Penyelesaian
1	8. Bubur Kertas (Paper Mache)	Memiliki pengetahuan dan ketrampilan bubur kertas sebagai bahan untuk membuat karya kerajinan kertas	8.1. Pengertian bubur kertas (paper mache) 8.2. Macam-macam produk bubur kertas 8.3. Teknik bubur kertas 8.4. Nilai estetis karya kerajinan kertas
2.	sda	sda	8.5. Disain bentuk 8.6. Bahan dan alat untuk bubur kertas 8.7. Pengolahan bahan 8.8. Konstruksi awal 8.9. Penyelesaian
3	sda	sda	8.10 Sifat bahan 8.11 Tahapan kerja 8.12 Penyelesaian
4	9. Produk Pilihan	Memiliki ketrampilan dalam mengembangkan konsep, prinsip, teknis dan bentuk ketingkat fungsi estetis	9.1. Pengantar umum 9.2. Jenis pilihan 9.3. Ide dan konsep 9.4. Bahan dan alat 9.5. Kreativitas 9.6. Pradisain
	sda	sda	9.7. Studi bandingan 9.8. Penentuan teknik 9.9. Penyempurnaan disain

1	2	3	4
16	sda	sda	9.10. Prose membentuk 9.11. Nilai estetis 9.12. Penyelesaiaan produk pilihan

SKEMA TATA HUBUNGAN POKOK BAHASAN



ALOKASI PERTEMUAN

No.	Pokok Bahasan	Alokasi	Pertemuan
1.	Pengantar Kerajinan kertas	1	1
2.	Pengetahuan Bahan, Alat dan teknik Kerajinan Kertas	1	2
3.	Melipat (Folding)	1	3
4.	Memotong (Cutting)	1	4
5.	Memotong Membuang (Cutout)	2	5 - 6
6.	Melipat dan Memotong (Folding and Cutting)	2	7 - 8
	TENTAMEN MID SEMISTER		9
7.	Melipat dan Mengerutkan (Folding and Scoring)	2	10-11
8.	Bubur Kertas (Paper Mache)	3	12-13-14
9.	Produk Pilihan	3	15-16-17
	TENTAMEN AKHIR SEMESTER	1	18
J u m l a h		16	18

Catatan : 16 x pertemuan, 2 x tentamen mid semester dan semester = 18 x

No.	Pokok Bahasan TIU No.	Sasaran Belajar	Pengajaran	Pelajaran	No.	Bacaan		
1	2	3	4	5	6	Mahasiswa (7)	Dosen (8)	9
1.	Pengantar Kerajinan kertas 1	1.1 Menjelaskan pengertian kerajinan kertas dengan bahasa sendiri 1.2 Menjelaskan ciri-ciri kerajinan kertas 1.3 Menjelaskan perbedaan antara bahan dasar dengan produk jadi dalam kerajinan kertas 1.4 Menjelaskan perbedaan antara perencanaan dengan pelaksanaan dalam kerajinan kertas 1.5 Menjelaskan hubungan antara alat dengan tujuan 1.6 Menjelaskan hubungan antara alat dengan materi dalam kerajinan kertas 1.7 Menjelaskan fungsi estetis dan fungsi praktis kerajinan kertas 1.8 Menjelaskan perkembangan kerajinan kertas terutama di cina, maxico, england dan polandia	Kuliah Mimbar	OHT Gambar cetak Contoh karya	1	Drs.M.Soewadji (1981),hal.1-4 Drs.Muzni Ramanto (1980),hal.1-2	Drs.M.Soewadji (1981), hal.1-4 Drs.Muzni Ramanto (1980), hal. 1-2 Pauline Jonnson (1958),hal.5-9	
2.	Pengetahuan Bahan, Alat dan Teknik Kerajinan Kertas 2	2.1 Menjelaskan bahan pokok dan bahan pelengkap yang digunakan untuk kerajinan kertas 2.2 Menjelaskan sejarah perkembangan kertas 2.3 Memilih kertas yang baik untuk kerajinan kertas 2.4 Menjelaskan cara-cara pengawetan kertas yang baik 2.5 Menjelaskan kegunaan masing-masing alat kerajinan kertas 2.6 Mendemonstrasikan penggunaan alat kerajinan kertas 2.7 Menjelaskan teknik memotong, melipat sebagai teknik dasar dalam kerajinan kertas 2.8 Mendemonstrasikan teknik melipat dan memotong dengan tepat	Kuliah Mimbar Latihan terbimbing	OHT Gambar cetak Contoh karya	2	R.S. Harisanjaya (1988),hal.38-47 Drs. Muzni Ramanto (1980),hal,3-25	R.S. Harisanjaya (1988),hal,38-47 Drs.Muzni Ramanto (1980),hal.3-25 Pauline Johnson (1958),hal.2-3	
3.	Melipat (Folding) 3	3.1 Menjelaskan pengertian melipat sebagai salah satu teknik dalam kerajinan kertas 3.2 Menjelaskan teknik melipat dasar dan teknik melipat lanjut	Kuliah Mimbar Latihan terbimbing	OHT Gambar cetak Contoh karya	3	Ernst Rottger (1959),hal.30-39	Ernst Rottger (1959),hal.30-39 Pauline Johnson (1958),hal.144-151	

		3.3 Mendemonstrasikan teknik melipat dengan kriteria rapi, teliti dan bersih 3.4 Menggunakan alat-alat kerajinan kertas untuk teknik melipat 3.5 Membuat sebuah desain kerajinan kertas untuk teknik melipat 3.6 Menyelesaikan sebuah kerajinan kertas dengan tehnik melipat					
4.	Memotong (Cutting) 4	4.1 Menjelaskan pengertian memotong sebagai salah satu teknik dalam kerajinan kertas 4.2 Menjelaskan prinsip-prinsip teknik memotong 4.3 Mendemonstrasikan cara-cara memotong kertas dengan baik 4.4 Mendemonstrasikan pemakaian alat untuk teknik memotong 4.5 Mencipta sebuah disain kerajinan kertas untuk teknik memotong 4.6 Mengerjakan sebuah kerajinan kertas dengan teliti, rapi dan bersih	Kuliah Mimbar Latihan terbimbing Praktikum	OHT Gambar cetak Contoh karya	4	Pauline Johnson hal.15-19	Pauline Johnson hal.15-13 Ernst Rottger(1959) Hal. 9-21
5.	Memotong Membuang (Cutout) 5	5.1 Menjelaskan pengertian memotong membuang dalam kerajinan kertas 5.2 Menjelaskan prinsip-prinsip dasar teknik memotong membuang 5.3 Menjelaskan langkah-langkah untuk memotong dan membuang dalam kerajinan kertas 5.4 Mendemonstrasikan penggunaan alat kerajinan kertas untuk teknik memotong membuang	Kuliah Mimbar Latihan terbimbing Praktikum	OHT Gambar cetak Contoh karya	5	Pauline Johnson (1958) Hal.25-33	Pauline Johnson (1958) Hal.25-33
6.	sda	5.5 Menjelaskan unsur disain untuk teknik memotong membuang 5.6 Menciptakan sebauh disain kerajinan kertas dengan teknik memotong membuang 5.7 Menjelaskan proses kerja teknik memotong membuang 5.8 Mengerjakan sebuak karya kerajinan kertas dengan teknik memotong membuang, teliti, rapi dan bersih 5.9 Menyelesaikan sebuah karya kerajinan kertas dengan teknik memotong membuang bernilai praktis dan estetis	sda	Gambar cetak Contoh karya	6	sda	sda

1	2	3	4	5	6	7	8
7.	Melipat dam Memotong (Folding and Cutting) 6	6.1 Menjelaskan pengertian teknik melipat dan memotong dalam kerajinan kertas 6.2 Menjelaskan prinsip-prinsip dasar teknik melipat dan memotong 6.3 Menjelaskan langkah-langkah untuk teknik melipat dan memotong 6.4 Mendemonstrasikan penggunaan alat untuk teknik melipat dan memotong 6.5 Mempraktekkan cara-cara memotong dan melipat dengan tepat dan benar	Kuliah mimbar Latihan terbimbing Praktikum	OHT Gambar cetak Contoh karya	7	Ernst Rottger (1959) Hal.22-27)	Ernst Rottger (1959) Hal.22-27
8.	sda	6.6 Menjelaskan unsur-unsur disain untuk teknik melipat dan memotong 6.7 Menciptakan disain karya karajinan kertas dengan teknik melipat dan memotong 6.8 Mengerjakan sebuah karaya kerajinan teknik melipat dan memotong dengan teliti, rapi dan bersih 6.9 Menyelesaikan sebuak karya kerajinan kertas dengan teknik melipat dan membuang (	sda	Gambar cetak Contoh karya	8	sda	sda
9.	Melipat dan Mengerutkan (Folding and Scoring) 7	7.1 Menjelaskan pengertian teknik melipat dan mengerutkan 7.2 Menjelaskan prinsip-prinsip dasar teknik melipat dan mengerutkan 7.3 Menjelaskan prosedur kerja teknik melipat dan mengerutkan 7.4 Mendemonstrasikan teknik melipat dan mengerutkan 7.5 Menggunakan bahan dan alat dengan tepat untuk teknik melipat dan mengerutkan	Kuliah Mimbar Latihan terbimbing Praktikum	OHT Gambar Cetak Contoh karya	9	Pauline Johnson (1958) Hal.42-65	Pauline Johnson (1958) Hal.42-65)
10.	sda	7.6 Mencipta disain kerya kerajinan kertas untuk teknik melipat dan mengerutkan 7.7 Menyiapkan pola bentuk kerajinan kertas teknik melipat mengerutkan 7.8 Memindahkan pola kepad bahan karya yang sebenarnya 7.9 Mengerjakan teliti, rapi dan bersih teknik melipat dan mengerutkan 7.10 Menyelesaikan sebuah karya kerajinan dengan teknik melipat dan mengerutkan	sda	Gambar cetak Contoh karya	10	sda	sda

	(Paper Mache) 8	tas (paper mache) dengan kata-kata sendiri 8.2 Menjelaskan prinsip-prinsip dasar pembuatan kerya dari bubur kertas 8.3 Menjelaskan prosedur kerja teknik bubur kertas (paper mache) 8.4 Membuat pradisain untuk sebuah kerya kerajinan kertas memakai bubur kertas 8.5 Menerapkan unsur-unsur disain dalam merancang kerya kerajinan kertas teknik bubur kertas	mimbar Praktikum	Contoh karya Gambar cetak		Betts (1955) Hal.11-13	Betts (1955) Hal.11-13	
12.	sda	8.6 Menjelaskan unsur disain kerajinan kerajinan kertas bubur kertas 8.7 Menciptakan sebuah rencana karya kerajinan kertas sesuai dengan disain. 8.8 Mengolah bahan baku menjadi bahan jadi yang siap untuk dipakai sebagai bahan kerajinan kertas 8.9 Mengerjakan konstruksi dasar untuk karya kerajinan kertas	sda	OHT Gambar cetak Contoh karya	12	Victoria Bedford Betts (1955) Hal.15-20	Victoria Bedford Betts (1955) Hal. 15-20	
13.	sda	8.10 Mendemonstrasikan pengolahan bahan dari bubur kertas 8.11 Mendemonstrasikan prosedur kerja teknik bubur kertas 8.12 Menjelaskan nilai estetis yang terdapat dalam kerya kerajinan kertas dari bubur kertas 8.13 Menyelesaikan sebuah karya kerajinan kertas dari bubur kertas	sda	Gambar cetak Contoh karya	13	Victoria Bedford Betts (1955) Hal.21-28	Victoria Bedford Betts (1955) Hal. 21-28	
14.	Karya Pilihan 9	9.1 Menjelaskan tujuan kerya pilihan dipandang dari segi kreatifitas 9.2 Menjelaskan arti kreatifitas bagi sebuah karya kerajinan 9.3 Menentukan pilihan berdasarkan kemampuan teknik yang sudah dipelajari sebelumnya 9.4 Menjelaskan kriteria yang dituntut dalam karya pilihan 9.5 Menyusun sebuah konsep tertulis untuk karya pilihan	Kulspensi	OHT Gambar cetak Contoh karya	14	Pauline Johnson (1953) Ernst Rottger (1959) Victoria Bedford Betts (1955) Drs.Muzni Ramanto (1980)	Pauline Johnson (1953) Ernst Rottger (1959) Victoria Bedford Betts (1955) Drs.Muzni Ramanto (1980) Bruce Angrave (1957)	
15.	sda	9.6 Menjelaskan konsep dari rencana karya pilihan	sda	Gambar cetak Contoh karya	15	sda	sda	

1	2	3	4	5	6	7	8	9
16.	sda	9.7 Menjelaskan fungsi estetis karya pilihan kerajinan kertas 9.8 Merancang sebuah kerya untuk dekorasi sebuah pertemuan 9.9 Membuat karya pilihan untuk tujuan dekorasi temanten 9.10 Menyelesaikan sebuah karya pilihan kerajinan kertas dengan sempurna 9.11 Menjelaskan sifat-sifat bahan dalam pengalaman pengolhan bahan untuk karya pilihan 9.12 Menunjukkan pengalaman teknik yang tergolong tingkat pengembangan ide 9.13 Menganalisa hasil karya pilhan yang di telah dibuat	sda	Gambar cetak Contoh karya	16	sda	sda	

Buku 2
KUMPULAN TUGAS

KERAJINAN KERTAS

Oleh :
Drs. Ramalis Hakim

JURUSAN PENDIDIKAN SENI RUPA DAN KETERAMPILAN KERAJINAN
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Latihan 16 16

LATIHAN 1

Pokok Bahasan : Pengantar Kerajinan Kertas

1. Pelajarilah kembali bacaan di bawah ini :
   a. Drs. M. Soehadji (1981) : hal. 1 - 4
   b. Drs. Muzni Ramanto (1980) : hal. 1 - 2
   c. Bruce Angrave (1957) : hal. 6 - 28
   d. Pauline Johnson (1958) : hal. 5 - 9
2. Berdasarkan bahan bacaan di atas, saudara simpulkanlah tentang konsep kerajinan dan kerajinan kertas yang akan meliputi :
   a. Pengertian kerajinan dan ciri-cirinya
   b. Sejarah kerajinan kertas
   c. Fungsi kerajinan kertas
3. Latihan ini dilakukan perorangan, dan hasilnya dirumuskan dalam bentuk tulisan.
4. Tugas ini dikerjakan di kelas dalam waktu sekitar 2 jam. Jika diselesaikan di rumah, hasilnya dikumpulkan pada tatap muka berikutnya. Selama bekerja saudara akan dibimbing oleh dosen/asisten.
5. Umpan balik akan diberikan di muka kelas pada jam pertemuan berikutnya.

LATIHAN 2

Pokok Bahasan : Pengetahuan Bahan, Alat dan Teknik Kerajinan Kertas

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1. Pelajarilah kembali bahan bacaan berikut ini :
   a. Drs. Muzni Ramanto (1980) : hal. 3 - 25
   b. R.S. Harisanjaya (1988) : hal. 38 - 47
   c. Pauline Johnson (1958) : hal. 2 - 3
   d. Victoria Bedford Betts (1955) : hal. 11 - 13
2. Berdasarkan bahan bacaan di atas, saudara diharapkan mengetahui tentang bahan, alat dan teknik yang digunakan untuk kerajinan kertas. Tugas anda meliputi :
   a. Inventarisasi bahan-bahan, alat-alat serta bermacam cara atau teknik untuk berkarya kerajinan kertas.
   b. Menentukan bahan, alat dan tehnik yang tepat untuk jenis karya karajinan tertentu.
   c. Menjelaskan cara pengawetan dan perawatan bahan dan alat yang digunakan untuk kerajinan kertas
3. Latiahan ini dilakukan perorangan, dan hasilnya dirumuskan dalam bentuk tulisan.
4. Tugas ini dikerjakan dikelas dalam waktu sekitar 2 jam Jika diselesaikan di rumah, hasilnya dikumpulkan pada tatap muka berikutnya. Selama bekerja saudara akan dibimbing oleh dosen/asisten.
5. Umpan balik akan diberikan di muka kelas pada jam pertemuan berikutnya.

LATIHAN 3

Pokok Bahasan : Melipat (Folding)

1. Pelajarilah kembali bahan bacaan berikut ini :
   a. Pauline Johnson (1958) : hal. 144 - 151
   b. Ernst Rottger (1959) : hal. 30 - 39
   Selanjutnya siapkan bahan dan alat yang diperlukan untuk praktikum.

2. Berdasarkan pengalaman yang anda dapat dari bahan bacaan di atas, buatlah sebuah karya kerajinan kertas dengan memakai tehnik melipat (folding). Bentuk karya dapat berupa hewan atau tumbuh-tumbuhan dengan ketentuan sebagai berikut :
   a. Ide tentang bentuk
   b. Prosedur kerja
   c. Kerapian, ketelitian dan kebersihan lipatan
   d. Penyelesaian
   e. Keindahan (Nilai estetis)

3. Latihan ini dikerjakan secara perorangan di kelas, diasistensi pada akhir jam tatap muka ke 2 guna pengumpulan data untuk umpan balik.

4. Umpan balik dilakukan atau diberikan di muka kelas pada akhir jam pertemuan. Bagi latihan yang belum sempurna akan disempurnakan lagi di kelas dan jika waktu tidak mencukupi diselesaikan di rumah. Hasilnya dikumpulkan pada tatap muka berikutnya.

LATIHAN 4

Pokok Bahasan : Memotong (Cutting)

1. Pelajarilah kemabli bahan bacaan berikut ini :
   a. Ernst Rottger (1959) : hal. 9 - 21
   b. Pauline Johnson (1958) : hal. 15 - 19

   Selanjutnya siapkan bahan dan alat yang diperlukan untuk praktikum.

2. Berdasarkan pengetahuan yang anda dapatkan dari bahan bacaan di atas, buatlah sebuah karya kerajinan kertas dengan teknik memotong (cutting). Karya dapat berbentuk dua demensional atau tiga demensional dengan ketentuan :
   a. Ide tentang bentuk
   b. Prosedur kerja
   c. Kerapian, ketelitian dan kebersihan potongan
   d. Penyelesaian
   e. Nilai estetis
3. Latihan ini dikerjakan perorangan di kelas, diasistensi pada akhir jam tatap muka ke 2.
4. Umpan balik akan diberikan diberikan pada waktu proses kerja berlangsung secara individu dan pada akhir latihan secara klasikal. Perbaikan latihan dapat dilanjutkan di rumah.

LATIHAN 5

Pokok Bahasan : Memotong-membuang (Cutout)

1. Pelajarilah kembali bahan bacaan di bawah ini :
   a. Ernst Rottger (1959): Hal. 22 - 28
   b. Pauline Johnson (1958): hal. 25 - 33
2. Berdasarkan bahan bacaan di atas, saudara jelaskan beberapa prinsip dari teknik memotong-membuang dalam kerajinan kertas. Penjelasan mengenai ini dapat saudara susun sebagai berikut:
   a. pengertian memotong-membuang
   b. Penggunaan bahan dan alat untuk teknik memotong-membuang
   c. Prosedur kerja
   d. Nilai-nilai estetis yang terdapat dalam karya yang memakai teknik memotong-membuang.
3. Latihan ini dikerjakan oleh perorangan dan hasilnya di rumuskan dalam bentuk tulisan.
4. Latihan ini dikerjakan selama 2 jam. Jika diselesaikan di rumah, hasilnya akan dikumpulkan pada tatap muka berikutnya.
5. Umpan balik akan diberikan dimuka kelas pada jam pertemuan berikutnya.

LATIHAN 6

Pokok Bahasan : Memotong-membuang (Cutout)

1. Pada latihan ke 6 ini bahan kuliah yang harus dipelajari adalah sebagaimana yang dicantumkan pada latihan ke 5. Untuk latihan ini persiapkanlah bahan dan alat yang diperlukan untuk berlatih membuar karya kerajinan kertas dengan teknik memotong dan membuang.

2. Buatlah sebuah karya kerajinan kertas dengan memakai teknik memotong-membuang seperti teori yang telah anda pelajari sebelumnya. Ketentuan yang harus diperhatian untuk ini adalah
   a. Desain (susunlah rencana atau gagasan yang tepat)
   b. Prosedur kerja
   c. Pengolahan bahan dan penggunaan alat
   d. Pembentukan
   e. Penyelesaian
   f. Nilai estetis karya

3. Latihan ini dikerjakan oleh perorangan dan dibimbing oleh dosen atau asisten.

4. Umpan balik akan diberikan diwaktu proses latihan berjalan dan diakhir latihan.

4. Hasil latihan ini berupa unsur atau elemen dekorasi yang dapat digunakan untuk pesta dan sejenisnya.

LATIHAN 7

Pokok Bahasan : Melipat dan Memotong
(Folding and Cutting)

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1. Pelajarilah kemabli bahan bacaan di bawah ini :
   a. Ernst Rottger (1959): hal. 22 - 27
   b. Pauline Johnson (1958): hal. 20 - 25
2. Berdasarkan bahan bacaan di atas, diharapkan anda telah mengetahui dan memahami tentang teknik melipat dan memotong. Untuk itu tulislah dengan pengertian anda sendiri tentang :
   a. Pengertian melipat dan memotong dalam teknik kerajinan kertas
   b. Dua bentuk karya kerajinan kertas dengan teknik melipat dan memotong.
   c. Prosedur kerja teknik melipat dan memotong
   d. Penggunaan Bahan dan alat untuk teknik melipat dan memotong
3. Latihan ini di kerjakan secara perorangan dan hasilnya di rumuskan dalam bentuk tulisan.
4. Latihan ini dikerjakan selama 1 jam di akhir jam tatap muka, jika di selesaikan di rumah hasilnya akan dikumpulkan pada tatap muka berikutnya.
5. Umpan balik akan diberikan di muka kelas selesai mengerjakan latihan atau pada tatap muka berikutnya.

LATIHAN 8

Pokok Bahasan : Melipat dan Memotong (Lanjutan)
(Folding and Cutting)

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1. Pada pertemuan ini bahan kuliah yang harus dipelajari adalah sebagaimana yang dicantumkan pada latihan ke 7 Untuk latihan ini persiapkanlah bahan dan alat serta disain yang telah dipersiapkan dirumah.

2. Buatlah sebauh karya kerajinan kertas dengan memilih dua bentuk; dua deminsional atau tiga dimensional. Yang perlu diperhatikan dalam hal ini adalah sisitim pembenkan motif dengan cara melipat terlebih dahulu, baru kemudian memotong.

3. Masing-masing anda melakukan kegiatan ini, dibimbing oleh dosen/asisten di kelas sebagai umpan balik.

4. Hasil kegiatan berupa karya dua atau tiga demensional akan dikumpulkan pada akhir pertemuan.

LATIHAN 9

Pokok Bahasan : Melipat dan Mengerutkan
(Folding and Scoring)

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1. Pelajarilah kemabli bacaan di bawah ini :
   a. Pauline Johnson (1958): hal. 42 - 65
2. Berdasarkan bahan bacaan di atas, dapat anda rumuskan suatu pengertian teknik melipat dan mengerutkan pada karya kerajinan kertas. Latiah anda untuk pokok bahasan ini adalah menulis kembali mengenai :
   a. Pengertian anda tentang teknik melipat dan mengerutkan.
   b. Prosedur kerja
   c. Bahan dan alat yang digunakan
   d. Bentuk karya yang dapat dibuat
   e. Nilai estetis dan nilai guna
3. Latihan ini dilakukan secara perorangan, dan hasilnya akan didiskusikan diakhir jam tatap muka, jika latihan ini tidak selesai akan dilanjutkan dirumah.
4. Umpan balik akan diberikan diakhir diskusi di muka kelas.

LATIHAN 10

Pokok Bahasan : Melipat dan Mengerutkan (lanjutan)
(Folding and Scoring)

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1. Pada latihan ke 10 ini adalah merupakan bahagian dari latihan ke 9, bahan pelajaran yang harus dibaca sama dengan latihan ke 9.

2. Buatlah sebuah karya kerajinan kertas dengan teknik melipat dan mengerutkan, yang harus diperhatikan dalam hal ini adalah:
   a. Disain dua atai tiga lingkaran
   b. Pemindahan disain ke Pola
   c. Pemindahan pola ke bahan karya
   d. Pembentukan
   e. Penyelesaian
   f. Nilai estetis dan nilai guna

3. Kegiatan ini dilakukan secara perorangan, dibimbing oleh dosen/asisten di kelas sebagai umpan balik secara Individu.

4. Umpan balik segera diberikan setelah selesai latihan pada akhir jam pertemuan secara klasikal.

5. Latihan diperbaiki diakhir jam tatap muka, jika diselesaikan di rumah akan dikumpulkan pada tatap muka berikutnya.

LATIHAN 11

Pokok Bahasan : Bubur Kertas (Paper Mache)

1. Pelajarilah kembali bahan bacaan berikut ini :
   a. Victoria Bedford Betts (1955) : hal. 11 - 13
2. Berdasarkan bahan bacaan di atas, ciptakanlah sebuah rancangan untuk karya kerajinan kertas dengan memakai bahan bubur kertas (paper mache).
3. Latihan ini diarahkan kepada bentuk dua dimensional Untuk itu perlu diperhatikan unsur disain yang diperlukan.
4. Dalam menciptakan disain ini, akan dibimbing oleh dosen/asisten. Umpan balik akan diberikan secara individu dan di akhir jam tatap muka diberikan secara klasikal.

LATIHAN 12

Pokok Bahasan : Bubur Kertas (Paper Mache)

1. Pelajari kembali bahan bacaan pada latihan 11
   Lanjutkan dengan bahan bacaan buku yang sama halaman 15 - 20.
2. Siapkanlah bahan dan alat yang diperlukan untuk kegiatan ini.
3. Berdasarkan disain yang telah dibuat pada latihan 11 kerjakanlah tahap berikutnya untuk menciptakan karya kerajinan kertas dengan bahan bubur kertas (paper mache).
4. Latihan ini dibatasi pada pengolahan bahan dan pembentukan. Untuk pembentukan perlu diperhatikan unsur desain yang telah anda pelajari sebelumnya.
5. Latiahan ini diperkiran akan selesai menjelang akhir pertemuan dan hasilnya akan didiskusikan. Umpan balik diberikan oleh dosen/asisten

LATIHAN 13

Pokok Bahasan : Bubur Kertas (Paper Mache)

1. Pelajarilah kemabali bahan bacaan pada latihan 11 dan 12 Tambahan bacaan dengan buku yang sama hal. 21 - 28
2. Berdasarkan latihan 11 dan 12, disain dan pengolahan bahan yang telah diselesaikan diharapkan anda melanjutkan membentuk pada latihan 13 ini
3. Perlu diperhatikan beberapa ketentuan guna penyelesaian karya Bubur Kertas (paper mache) sebagai berikut :
   a. Kekuatan daya rekat bahan
   b. Kerapian, ketelitian dan kebersihan
   c. Kesempurnaan penyelesaian
   d. Pengawetan karya
4. Latihan dilakukan perorangan dan hasilnya akan dikumpulkan diakhir pertemuan.
5. Umpan balik diberikan diwaktu proses berlangsung secara individu dan diakhir pertemuan secara bersama-sama oleh dosen/asisten.

LATIHAN 14

Pokok Bahasan : Karya Pilihan

1. Pelajarilah kembali semua bahan bacaan mulai latihan 1 sampai dengan latihan 13. Sebagai pengayaan untuk latihan ini dapat anda pelajari buku-buku berikut ini :

   a. Pauline Johnson, Creating With Paper, Basic Forms And Variations (1958), University Of Washington Press.

   b. Bruce Angrave, Sculpture in Paper, The Studio Publication London & New York (1957).

   c. Victoria Bedford Betts, Exploring Paper Mache, Copyright (1955).

   d. Ernst Rottger, Creative Paper Design, Reinhold Book Corporation, New York Amsterdam London (1959).

2. Latihan ini akan melengkapi pengetahuan anda untuk dapat membuat sebuah karya kerajinan kertas yang bernilai estetis dan praktis. Kebebasan memilih teknik dan bentuk memungkinkan anda dapat menemukan kreativitas untuk mencipta sebuah karya kerajinan kertas.

3. Untuk latihan 14 ini perlu anda perhatikan petunjuk berikut ini :

   a. Buatlah disain dari bentuk yang dikehendaki
   b. Tentukan bahan dan alat yang diperlukan
   c. Susunlah program kerja

4. Kegiatan ini dilakukan oleh setiap mahasiswa di dalam kelas. Waktu berlangsung kegiatan, akan diberikan umpan balik.

LATIHAN 15

Pokok Bahasan : Karya Pilihan

1. Pelajari bahan bacaan yang dianjurkan untuk latihan 14
2. Berdasarkan latihan 14, anda diharapkan pada latihan 15 ini untuk membuat sebuah disain karya pilihan. Dalam mengerjakan disain perlu diperhatikan hal-hal sebagai berikut:
   a. Teknik yang digunakan
   b. Bahan dan alat yang dipakai
   c. Nilai estetis dan praktis yang dimiliki
   d. Proses pengerjaan.
3. Disain yang dibuat diasistensi dan akan diberikan umpan balik diwaktu kegiatan berlangsung dan diakhir pertemuan.

LATIHAN 16

Pokok Bahasan : Karya Pilihan

1. Latihan ini merupakan lanjutan dari latihan 14 dan 15 Sesuai dengan hasil latihan 14 dan 15, siapkan bahan dan alat yang diperlukan untuk membuat karya pilihan ini.

2. Kerjakanlah tugas ini sesuai dengan Disain yang telah disiapkan dan perhatikan program kerja yang telah anda susun sebelumnya.

3. Untuk penyelesaian tugas ini, jika waktu tidak mencukupi dapat diselesaikan dirumah, dan tugas ini dikumpulkan diakhir semester, tidak dikembalikan kepada mahasiswa.

Buku 3
KUMPULAN BAGAAN MAHASISWA

KERAJINAN KERTAS

Oleh :
Drs. Ramalis Hakim

JURUSAN PENDIDIKAN SENI RUPA DAN KETERAMPILAN KERAJINAN
FAKULTAS PENDIDIKAN BAHASA DAN SENI
INSTITUT KEGURUAN DAN ILMU PENDIDIKAN
PADANG - 1989

BAHAN BACAAN

POKOK BAHASAN 1

1. Drs. M. Soewadji, Seni dan Kerajinan, Jurusan Seni Rupa STSRI-ASRI Yogyakarta, 1981, hal.1-4

2. Drs. Muzni Ramanto, Kerajinan Kertas, Jurusan Seni Rupa FPBS IKIP Padang, 1980, hal.1-2

3. Pauline Johnson, Creating With Paper, Basic Forms and Variation, University of Washington Press,1958, p. 5-9

INTRODUCTION TO PAPER

There are a great many different kinds of paper. Each has its own distinguishing characteristics arising from its organic structure and revealed in its texture, translucence, and tensile strength, and these qualities serve to identify and distinguish one from the other. Thus, paper can be rough, smooth, transparent, opaque, thin, heavy, fine, tough, or fragile.

Some papers can be found quite readily in ordinary everyday use; for others of a more specialized nature, it may be necessary to search in out-of-the-way places, using imagination as to their possibilities from the artistic point of view. Thus, the papers shown in the photographs on the facing page are normally used for other than artistic purposes. The paper at the bottom was found in a butcher's shop, where it had been put through a cubing machine that is used to roughen the surface of meats. The paper was treated in this way in order to make it more absorbent, but from our point of view the roughed-up surface has an attractive textural quality that suggests all kinds of possibilities for imaginative use. This is but one example of how exciting and frequently rewarding an experience it can be to explore in unexpected places for materials, many of which can often be obtained at little or no cost. For instance, it may be well worth while making friendly contact with the local printing plant or bookbinding firm where, at the end of the day, the paper trimmings are thrown into waste bins. These are often quite varied in colors and kinds and are particularly good for the many uses where strips can be employed.

The type of paper known as newsprint is perhaps the least costly of any and can usually be obtained without much difficulty from a local newspaper office. Similarly, old newspapers can be especially useful for making experiments, since there are always plenty of them to be had, and there is no need to feel guilty about being wasteful or extravagant in using them lavishly. These are helpful in making paper patterns, such as those required when designing play or party costumes, in which much initial planning is essential and discarded trial designs have to be thrown away. For exploring or trying out various techniques in cutting and folding, typing, mimeograph, and bond papers are adequate and have the advantages of being responsive to handling, not too costly, and generally available. Another very serviceable paper for general utility is butcher or Kraft paper, which because of its strength and flexibility is excellent to use for all kinds of purposes. Shelf paper, commonly used at home, has a pleasant coated surface, can be folded easily, and, like all of the papers referred to here, is a responsive material with which to work.

Ready availability and low cost have been emphasized not so much for the sake of cheapness in itself but because these two factors make it possible

for anyone to try out this fascinating art and for teachers to initiate it with their pupils within the limits of restricted budgets. They can do so without feeling obliged to undertake a heavy investment in equipment and materials and, more important, without feeling initially inhibited by any fear of wasting materials or of being unable to handle them.

Thus, with the simplest of materials, sufficient imagination, and a sensitive feeling for quality, satisfying results can be produced. Some of the most imaginative work has been created by world-famous artists employing the simplest materials, as can be seen in the photograph of the cardboard construction by Picasso. There are also more elaborate kinds of paper—papers with silk or other fibers embedded in them; or papers embossed with surface designs; or papers coated with various substances, like gold and silver metallic papers and glossy-surfaced drawing and printing card.

When white papers and cards are used in paper craft they are especially effective in helping to reveal sculptural form because light reflected from their monochrome surfaces creates subtle gradations of tone that emphasize the abstract features of the structural design. There are a number of varieties of papers and thin boards in this category, such as Bristol board, engineer's drawing detail paper, and parchment. Most schools are provided with or can secure white construction and drawing papers of various weights and qualities, obtainable either as single sheets or made up into tear-off pads. For the purposes of paper craft each of these has qualities that can be exploited in order to give folded edges with softer or sharper definition and with greater or lesser degrees of light reflection. Although the differences may be very subtle, familiarity and experience in the use of these various papers will enable the artist to employ whichever best suits his purpose.

There are times when a monochrome effect is desirable and stronger than a number of colors used together. Combinations of black with gray or white are often pleasing, making possible wide or subtle value contrasts depending upon the juxtaposition of the papers. An example is the silhouette—at one time a very popular art that flourished quite generally in Europe—in which the whole effect depends upon the contrast of dark with light.

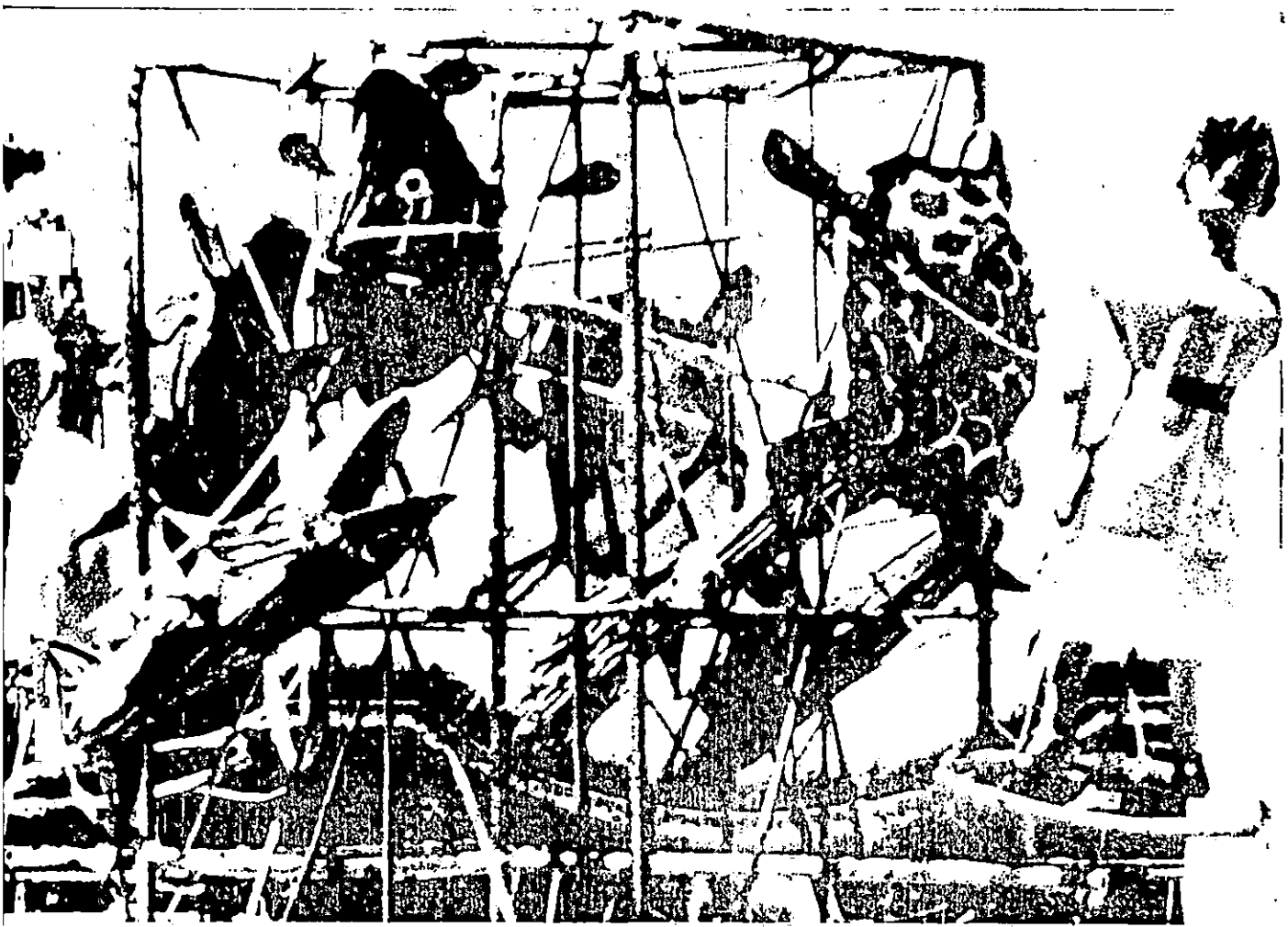
Working with color brings in a different element of visual pleasure, not only in the color itself but in the various combinations possible, the value relationships of contrasting and distinguishing between colors, and the use of zones of colors in a composition to define specific areas. Papers suitable for use in this connection vary from light to heavy depending upon need. Poster and construction papers, most frequently used in schools, as well as colored glazed papers, gift wrappings, Japanese papers, and Bristol boards can all be explored for their chromatic as well as their plastic values. Blotting paper is now manufactured in a wide range of colors and was, in fact, one of the papers most frequently used in the early days of experiments with paper craft.

The senses of sight and touch respond in various ways to the texture or surface qualities of papers. Translucent examples like tissue paper, tracing

paper, wax paper, cellophane, and onionskin, which have a light and airy feeling, are delightful to use where thinness and lucidity are desired. On the other hand, there may be projected a design in which the main interest or flavor will depend upon a feeling of strong textural quality in the material. In this event Textone, oatmeal, cream manila, crepe, and similar papers which are rough in "feel" will be ideal for the purpose. Again, an imaginative designer will soon appreciate the vitality and "aliveness" that can be imparted by sensitive combinations and contrasts of varying textures that in their associations serve to create richness of surface.

Both strength and delicacy are factors in the creation of paper art. There are times when actual structural strength is required so that the paper will be tough enough to resist considerable pull or tension, or thick enough to stand up of its own accord or to support the weight of some other feature. Typical examples of items in this category are oak tag, Bristol board, chipboard, and matting and illustration boards. Manufacturers produce hundreds of varieties of these, differently classified according to their surfaces, thicknesses, and composition, all offering many possibilities for use in the hands of creative artists. Sometimes strength is added to the paper pulp during manufacture by backing it with, or incorporating into it, some other element like chopped straw, muslin, or wire mesh. In the papers known as "plies," several layers are bonded together on the plywood principle, so that the lines of stress are set at different angles to each other and thus both tensile and structural strength are increased.

Among the best known and most frequently used of the papers and boards manufactured primarily for their strength are those which are corrugated. Sometimes the corrugations are left free so that the paper can be turned and rolled; otherwise they are backed by, or sandwiched between, layers of paper so that they are less flexible or even rigid. This principle of imparting strength to a flexible material by corrugating, folding, or pleating it (so excellently illustrated in the ruff, the concertina, and the diaphragm of a camera) is one universally employed and is the underlying structural feature of many of the examples illustrated in this book.



This wooden tower, called a castillo, is rigged with fireworks and used for religious festivals in Mexico. The paper structures are built over simple light reed armatures.

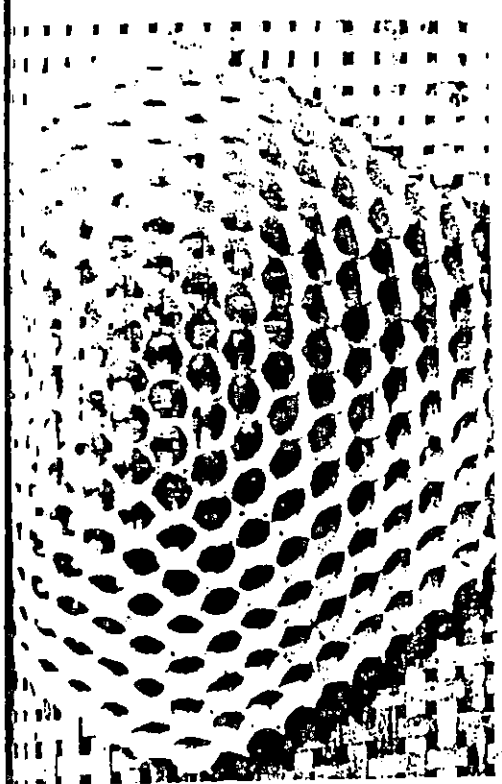
Paper is such a familiar item in our environment that it can all too easily be taken for granted. Yet before 200 B.C. no such product existed. Originally the Chinese were responsible for developing this material, which was introduced into Europe one thousand years later by the Arabs. In the nineteenth century the French scientist Réaumur observed a wasp taking slivers and bits of wood, chewing them into a pulp, and laying them in strips to make a nest. From this he conceived the idea of the mechanical disintegration of wood out of which came the basis of the wood pulp industry.

Paper is made from such constituents as wood pulp, vegetable fibers, rags, or a combination of these, which are chemically treated, beaten, mixed with water, and finally pressed. It is interesting to note the divergence of products that result from this process—newsprint, tissue, cardboard, in fact, up to several thousand different kinds of papers, each with distinguishing characteristics and many subtle variations.

Before paper became so plentiful it was respected as something precious and rare; now vast quantities are available, and it is an indispensable part of our lives. The demands for it have increased tremendously, and the production of paper has become so important that it is now the nation's fifth largest industry.

Every day we come into contact with a wide range of products made from paper, including such varied items as the morning newspaper, periodicals, books, facial tissues, packaged goods, and, of course, paper money. It is a significant characteristic of our society that we waste a great deal of this material. In fact, an important part of the industry is devoted to the production of disposable paper articles like cups, plates, napkins, and towels.

It is hoped that students and others will be made more aware of paper and its potentialities by experiencing and exploring the many possibilities it provides, guided by taste and the principles of design. A greater and more sensitive use of this material both for educational and for pleasurable purposes could make a real contribution to our culture.



A paper study from the Arts and Crafts and Industrial Design School of Helsinki, Finland (product design class; Ilmari Tapiovaara, adviser).

K E R A J I N A N K E R T A S

Oleh: Drs. Muzni Ramanto

PENDAHULUAN

Berbagai cara dalam menanggulangi hidup di dunia ini telah ditempuh orang. peristiwa ini telah berjalan berabad-abad lamanya. Berbagai benda-benda pengisi kebutuhan itu telah muncul dan diciptakan manusia. Mulai dari benda-benda dengan bentuk dan proses yang sederhana sampai kepada penemuan mutakhir. Seperti kapak batu, gerabah, periuk belanga, kendi, pakaian kulit kayu, hiasan dari benda-benda alam sampai kepada penemuan plastik yang kini menguasai hidup manusia. Semua kebutuhan rumah tangga kini banyak dibuat dari bahan plastik. Bahan yang dianggap ekonomis dan efisien.

Dari hasil perbuatan manusia itu jelas munuju kepada pemenuhan kebutuhan jasmani dan rohani. Oleh karena itu wujud bendanyapun mempunyai dua fungsi, yaitu benda yang berfungsi guna dan benda yang berfungsi hias.

Usaha usaha menciptakan benda benda, baik yang berfungsi guna maupun yang berfungsi hias tersebut jelas merupakan pekerjaan manusia yang dikerjakan dengan tangan manusia itu sendiri. Dari hasil pekerjaan tangan itu kemudian dijadikan model untuk diperba nyak dalam industri industri barang kerajinan. Melihat kepada potensi ini maka dalam pendidikan formal maupun non formal terdapat suatu kegiatan yang mengembangkan pote nsi keterampilan manusia untuk menciptakan benda benda kerajinan yang dalam kata lain disebut " Kerajinan Tangan ". Di sekolah modern selalu dikembangkan dua kebutuhan manusia yaitu kebutuhan akan pengembangangan faktor intelektuil dan faktoremosionil. pekerjaan tangan sebagai salah satu mata pelajaran pada hakekatnya mengandung kedua unsus tersebut dalam penggarapannya. Pengembangan intelek dan keterampilan dan pengambangan emosionil dalam penciptaan. Dalam bahasa asing kerajinan Tangan ini disebut dengan istilah " Handicraft ".

(sTp)

Pengertian handicraft dalam Encyclopodia Britanica terbitan tahun 1966 menyebutkan bahwa :

". Handicraft we re originality based on here production for home " but soon surplus items werw trodet and more elaborate production and distribution proces influenced the goods made Disamping itu handicraft juga dapat diartikan sebagai " .....manual skills for making usable products graced with intertional visual appeal ".

Da lam pengertian yang sederhana dapat dikatakan bahwa handicraft itu adalah upaya manusia dalam sesuatu benda dengan mempergunakan tangan.

Dalam pelaksanaan mata pelajaran pekerjaan tangan atau Handicraft disekolah dapat mempergunakan berbagai bahan atau material. Orientasi material terutama tentu saja melihat kepada potensi material yang terdapat disekitar anak dan disekitar lingkungan sekolah. Hal ini sangat penting sekali karena tampa orientasi kepada lingkungan akan menyulitkan kepada pengadaan bahan dalam kelancaran jalnnya pelajaran. Tentu saja usaha pengadaan bahan dapat melalui jalur sekolah dan jarur ahak didik.

Sejarah dapat diadakan sekolah tertentu sangat baik karena sangat menguntungkan anak didik kelancaran jalannya pelajaran. Akan tetapi bila jalur ini tidak dapat ditempuh tentu saja jalur anak didik dapat dipergunakan.

Dari sekian banyak bahan dalam pembicaraan berikutnya kita akan bicarakan salah satu diantaranya yaitu kertas sebagai Bahan Kerajinan. Disamping kertas sebagai bahan dapat dengan mudah dicari juga kegiatan ini terdapat dalam kurikulum S.P.G. untuk dikembangkan kepada anak didik Disamping itu melihat kepada sifat materialnya maka kemungkinan kertas untuk dapat dianggap dengan sedikit resiko pengerjaan sangat cocok untuk dikembangkan.

(gip)

S E N I D A N K E R A J I N A N

1. Arti dari kerajinan

Pengertian pertama dari kata 'seni' untuk dibedakan dengan seni yang sebenarnya adalah merupakan pengertian yang usang dimana dalam buku ini saya sebut saja dengan kerajinan atau craft. Inilah yang dalam bahasa Latin kuno ars, dan τέχνη dalam bahasa Yunani berarti: kemampuan untuk memproduksi suatu hasil yang belum diketahui lebih dahulu dengan bantuan perbuatan yang benar-benar terkendali dan terarah. Agar tercapai langkah-langkah pertama yang meyakinkan, penting kiranya untuk mengesampingkan adanya gambaran mengenai kerajinan itu lepas dari adanya gagasan mengenai seni yang sebenarnya. Sekali lagi, untuk melaksanakan ini, pertama kali kita harus mengumpulkan ciri-ciri khas dari kerajinan itu.

(1) Kerajinan selalu melibatkan adanya perbedaan antara peralatan dan tujuan, yang masing-masing itu tergambar dengan jelas sebagai sesuatu yang berlainan namun saling berkaitan. Istilah 'peralatan' secara bebas melekat pada benda-benda yang dipergunakan untuk mencapai tujuan tadi, seperti misalnya alat-alat, mesin, atau bahan bakar. Tepatnya, istilah ini tidak melekat pada benda-bendanya melainkan pada perbuatan-perbuatan yang ada hubungannya dengan alat-alat itu; penggunaan alat-alat itu, penggunaan mesin-mesin tersebut, atau pembakaran bahan-bahan bakar itu. Perbuatan-perbuatan ini (seperti tergambar didalam pengertian langsung dari kata ini) dilakukan agar tercapai tujuan yang di maksud, dan nantinya, bila tujuan tersebut sudah tercapai, perbuatan-perbuatan ini kelak akan ditinggalkan. Ini mungkin bisa dipergunakan untuk membedakan antara gagasan mengenai maksud itu dengan 2 gagasan lain yang seringkali membingungkan: yaitu gagasan mengenai bagian, dan gagasan mengenai materi. Hubungan antara bagian dengan keseluruhan adalah seperti hubungan antara alat dan tujuan, dimana bagian itu penting sekali bagi kesceluruhan, disebabkan oleh

karena hubungannya dengan keseluruhan itu yang mungkin terjadi dengan sendirinya sebelum keseluruhan itu ada; tapi bila keseluruhan itu ada maka bagian itupun ada, sedang apa bila tujuan itu ada maka peralatan itu sudah tidak ada lagi. Sedangkan mengenai gagasan tentang materi kita akan kembali pada persoalan No. 4 dibawah ini.

(2) Kerajinan itu melibatkan adanya suatu perbedaan antara perencanaan dan pelaksanaan. Hasil yang akan diperoleh sudah dipikirkan sebelum sampai pada perencanaan dan pelaksanaannya. Si pengrajin mengetahui apa yang ingin ia buat sebelum ia memulai untuk membuatnya. Hal mengetahui sebelumnya ini sangat penting didalam bidang kerajinan: misalnya saja, sesuatu yang sebut saja, adalah besi yang tahan karat, yang dibuat tanpa mengetahui sebelumnya seperti itu, maka pembuatan itu bukan termasuk dalam kasus kerajinan melainkan suatu kebetulan saja. Lebih dari pada itu, hal mengetahui sebelumnya ini haruslah secara tegas, jangan hanya samar-samar saja. Bila seseorang bersiap-siap untuk mulai membuat sebuah meja, tapi ia menggambarkan bentuk meja itu hanya samar-samar saja, misalnya, hanya berukuran antara dua kali empat kaki dan tiga kali enam kaki saja, serta antara dua dan tiga kaki saja tingginya, begitu seterusnya, maka ia bukanlah seorang pengrajin.

(3) Alat dan tujuan, didalam proses perencanaan berhubungan searah (sejalan); sedang dalam proses pelaksanaannya berlainan arah. Didalam perencanaan, tujuan lebih dulu ada daripada alatnya. Tujuan itu harus dipikirkan lebih dulu, sesudah itu baru alatnya. Didalam proses pelaksanaan, alat itu muncul lebih dulu, sedang tujuannya dicapai lewat alat-alat itu.

(4) Ada perbedaan antara bahan dasar dan produk jadi. Kerajinan itu selalu dibentuk atas sesuatu, dan bertujuan untuk mengubah bentuk itu menjadi sesuatu yang lain/Berbeda. Perubahan bentuk itu bermula dari bahan-dasar dan berakhir menjadi

produk jadi. Bahan dasar itu sudah tersedia dalam bentuk jadi sebelum penanganan khusus dari kerajinan itu dimulai.

(5) Ada perbedaan antara bentuk dan materi/bahan. Materi adalah apa yang dalam bahan dasar dan dalam produk jadinya sama; bentuk itu adalah apa yang berbeda/lain, bentuk dari kerajinan yang berubah. Untuk menguraikan bahan dasar itu sebagai sesuatu yang masih mentah bukanlah bermaksud untuk mengatakan bahwa bahan itu tidak berbentuk, tetapi hanyalah berarti bahwa bahan itu belum lagi mempunyai bentuk seperti yang akan didapat nanti bila sudah menjadi produk jadi lewat 'transformasi'.

(6) Ada suatu hubungan hierarkhis antara berbagai macam kerajinan, yaitu yang satu memenuhi kebutuhan yang lain, sedang yang lain menggunakan apa yang disediakan oleh yang lain itu. Ada tiga macam hierarkhi, yaitu: hierarkhi materi, alat, dan bagian-bagian.

(a) Bahan dasar dari satu kerajinan adalah produk jadi dari kerajinan yang lain. Oleh karena itulah para ahli tanaman mengembangbiakkan tanam-tanaman/pepohonan dan memelihanya selagi pohon-pohon itu tumbuh, agar dapat menyediakan bahan dasar bagi para penabang kayu yang akan mengubahnya menjadi balok-balok; balok-balok ini akan menjadi bahan dasar bagi pengusaha penggergajian kayu yang akan mengubah balok-balok itu menjadi papan-papan; dan papan-papan ini, sesudah melalui proses lebih lanjut lagi, yaitu dengan dipilih dan diawetkan, akan menjadi bahan dasar bagi ahli membuat kursi.

(b) Didalam hierarkhi alat-alat, suatu kerajinan menyediakan peralatan untuk yang lain. Dengan demikian, pedagang kayu menyediakan penopang lubang galian bagi para penggali tambang, penggali tambang menyediakan batubara bagi tukang besi (pandai besi); pandai besi menyediakan [illegible] bagi petani; dan seterusnya.

(c) Didalam hierarkhi bagian-bagian, suatu oporasi komploks, seperti misalnya, dalam pembuatan sebuah mobil, pekerjaan itu dibagi-bagi menjadi sejumlah bagian-bagian pekerjaan, pabrik yang satu membuat mesin, yang lain membuat gir, yang lain lagi membuat chasis, yang satunya membuat ban, yang satu lagi membuat perlengkapan listruknya, dan sebagainya, perakitan yang terakhir bukan semata-mata pembuatan mobil itu melainkan hanya penyusunan bersama dari bagian-bagian tersebut. Didalam satu atau bahkan lebih dari cara-cara ini setiap kerajinan mempunyai ciri - ciri hierarkhis sendiri-sendiri; baik berhubungan secara hierarkhis dengan kerajinan yang lain atau sebagai dirinya sendiri yang terdiri atas berbagai macam oporasi yang hiterogin yang secara hierarkhis berhubungan dengan sesama mereka.

Tanpa menganggap bahwa gambaran-gambaran ini secara serentak telah menghabiskan adanya gagasan dari kerajinan, atau bahwa masing-masing dari mereka itu secara terpisah merasa istimewa bagi gagasan kerajinan itu, maka kita boleh beranggapan dengan kemantapan pendirian yang penuh toleransi bahwa, dimana sebagian besar dari gambaran-gambaran itu menghilang dari kegiatan-kegiatan tertentu maka kegiatan itu bukanlah suatu kerajinan, dan, apabila kegiatan itu disebut dengan kerajinan, maka sebutan itu mungkin di kemukakan secara tidak benar atau dengan cara yang samar-samar dan tidak tepat.

2. Teori Teknis dari Seni

Sebenarnya philsuf-philsuf Yunani-lah yang menyusun gagasan dari seni kerajinan itu, dan didalam tulisan-tulisan merekalah perbedaan-perbedaan diatas dijelaskan. Menurut kenyataan, filsafat kerajinan itu merupakan salah satu pencapaian pemikiran orang Yunani yang paling besar dan berisi/bermutu, atau menurut ukuran aliran itu, mulai dari Socrates sampai Aristoteles, yang karyanya, secara kebetulan paling banyak diketemukan.

I. P E N D A H U L U A N

Assallamualaikum warahmatullahi wabarakatuh.

Berhubung oleh karena berbagai macam barang kerajinan hanya dapat dibuat berdasarkan contoh atau model, maka nampaklah dengan jelas fungsi dan peranan si perencana (disainer) sebagai manusia sumber idedalam membuat barang. Akan tetapi kita hanya memiliki " Disainer alamiah ", didalam khasanah budaya kita. Yakni orang orang yang menciptakan barang barang kerajinan, yang tingal didesa desa yang mewariskan kepandaian membuat barang secara tradisional dan turun temurun. Boleh dikatakan tidak ada atau jarang kita jumpai kreasi baru dalam ciptaannya. Hal ini disebabkan keterbatasan pandangan, cara berfikir, dan kemampuan yang disebabkan tidak adanya pendidikan dan sarana dibidang ini

Disekolah sekolah sekarang diajarkan membuat barang barang kerajinan. Persoalannya bukan hanya bagaimana mata pelajaran ini diajarkan. Akan tetapi bagaimana kelak mereka trampil dan juga kreatif dalam menciptakan barang-barang baru. Schingga seorang guru keterampilan kerajinan harus juga mengetahui dan mengajarkan dasar dasar perencana dan pembuatan barang-barang kerajinan.

Paper ini hanya akan membuat tentang dasar dasarperencanaan misalnya tentang proses dan tahapan merencana (design)hubungan estetika (Keindahan)dengan bentuk desain, unsur unsur keindahan dalam disain , dan sedikit mengenai bahan. Schingga faktor faktor lain seperti faktor pasar, konsumen dan produsen tidak dibahas, oleh karena masaalah ini sudah diluar topik kita.

Semoga saja paper ini dapat memberi horison yang baik kepada kita semua.

2. Jenis dan macam barang kerajinan

Berbagai jenis dan macam barang kerajinan dapat kita temukan dalam kebudayaan daerah kita, Dan beberapa diantaranyadipela jari dalam sekola h sebagai mata pelaja ran, serta terikat pula dala m suatu kurikulum. Misalnya kerajinan keramik, anyaman, dan kerajinan kayu (ukiran) Barang barang kerajinan yang lain seperti kerajinan kulit logam, emas,meubel dsb, tidak dipelajari oleh karena keterbatasan waktu belajar.[1)]

Kerajinan keramik bahan dasarnya adalah tana h liat akan tetapi harus kita bedakan dengan yang memakai glassir dan yang tidak. Yang tidak memakai glassir biasanya disebut dengan tembikar. Hasilnya antara la in tempayan, kendil, jambangan, belanga, asbak, pot besa r, pot kecil, kendi anglo dsb.

Dalam kera jinan anyaman bahan dasarnya lebih bervarie si, misalnya anyamanbambu bisa dibuat kipas, nyiru, kranjang, kap lampu dsb, sedang yang lain adalah anyaman rotan, ijuk, anyaman plastik, anya man nylon, anyaman sebut, anyaman pandan, nipah anyaman tali dsb.

Kerajinan kayu tidak terbatas pada ukiran saja. Kerajinan kayu meliputi barang barang yang dibua t dari kayu seperti patung kayu, ukiran kayu, meja hias dsb.

Dalam pembuata n setiap barang ini tentu saja nilainya tergantung dari pada bagus ata u tidaknya, disamping fungsinya sebagai ba rang terpakai. Didalam masyarakat kita, kita lihat ada dua macam bentuk usaha yang mengelola baraang barang kerajinan ini (memproduksinya) yaitu : home industri yakni usaha pembuatan barang kerajinan dengan tidak menggunakan tenaga buruh yang diupah dan industri dan industri kerajinan yaitu pembuatanbarang dengan menggunakan tenaga buruh yang diupah.

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1). untuk melihat jenis dan macam barang kerajinan lihat lampiran.

3. PERENCANAAN (DESIGN)

Apakah yang dimaksud dengan perencanaan atau design? Barangkali hal ini yang kita bahas pada uraian yang kedua ini. Apabila anda atau saya diserahi tugas untuk membuat sesuatu dengan cat dankwas serta sepotong kertas, maka saya mulai berfikir:"bentuk apakah yang akan saya buat? Bagaimanakah warnanya ? Bagaimanaka h kompososinya ? Sebetulnya pertanyaan ini telah melibatkan saya dengan persoalan perencanaan (disagn). Lalu saya ambil kertas lain kemudian saya buat corat coret atau sketsa. Sketsa it:. lalu sayaperjelas, dari beberapa sketsa saya pilih. Setelah puas, kemudian saya ambilsalah satu sketsa yang terbaik untuk dijadika n contoh membuat lukisan. Kemudian saya pilih warna dan kwas yang saya rasa cocok untuk lukisan itu. Nah apa ya ng saya lakukan ini sebetul nyaadalah proses merencana. Demikian juga halnya apabila andan atau siapa saja, apabila suatu saat berhadapan dengan soal yang sama. Apakah yang kita hadapai itu bahan dari kayu, tanah liat, besi, ke rtas atau apa saja guna untuk membuat sesuatu barang. Yang terfikir oleh kita per tama kali tentu saja adalah benda/ barang apakah yang akan kita buat itu. Atau sebe liknya, setelah kita melihat sesuatu yang menarik untuk kita ciptakan, maka timbul ide untuk membuatnya sendiri berdasarkan contoh tadi.

Biasanya kitamenghada pi beberapa pilihan, pilihan yang pertama adalah meniru "barang" yang sudah jadi, apabila dianggap bahwa kita bisa pula menciptakan/merubah sedikit terciptalah disain yang baru. Akan tetapi bila kita merasa bahwa kita bisa mencipta, kita berusaha untuk merencanakan ses uatu bentuk yang baru sama sekali.

Sebetulnya tidak ada pedoman yang pasti atau sesuatu rumusan bagi kita untuk mencipta. Dorongan yang paling besar dalam mencipta sebetulnya timbul dari jiwa, atau perasaan kita bahwa apa yang aka n kita buat ini berguna bagi kita, buat orang sekitar kita, dam masya rakat, oleh karena ciptaan kita itu berfungsi untukkehidupan kita. Tidak ada orang yang tidak senang dengan yang bagus yang indah.,dan berguna. Semua ora ng cendrung untuk memilih yang paling baik dan berguna untuk dirinya. Semua bentuk ciptaan apakah itusendok, piring, cangkir, lampu, pakaian meja kursi,.....

lukisan dan sebagainya kita gunakan dalam kehidupan sehari-hari. Makintinggi peradaban sesuatu bangsa, semakin tinggi pula tuntutannya dengan penggunaan alat alat yang membantu hidupnya agar bahagaia dan menyenangkan serta memudahkan hidupnya.

Oleh karena itu pengetian disain dapa t kita simpulkan sebagai berikut yakni :

> Merangcang, menciptakan bentuk, atau menyusun sesuatu berikut memilih unsur-unsurnya, mewujudkannya menjadi bentuk ciptaan yang mengandung nilai seni dan berfungsi.

T kita berbicara mengenai keindahan, bagaimana nakah hubungan antara keindahan dan disain ? Aspekaspek apa saja yang menyebabkan sebuah barang itu menarik ?

Ada perbedaan pengertian keindaha n didalam seni murni (finearts) dan dengan seni pakai (Aplied art). Keindahan didalam seni murni mempermasalahka n bagaima na sesuatu bentuk itu menggugah perasaan kita melalui susunannya. Jadi sema ta-mata seni murni itu kita nikmati melalui penceraan indra kita, baik itu seni musik, seni lukis, seni patung, a tau sastra.

Didalam seni paka i (aplaidarts), bentuk ciptaan itu tidak hanya menggugah kita melalui susunan bentuknya akan tetapi juga dapat menggugah kita karena fungsi pakai nya, seperti keranjang, pakaian dsb. Jadi ada duafaktor yang menggugah kita yakni faktor perasaan dan rasio kita. Kita berfikir bahwa barang itu dapat kita pergunakan.

Oleh karena itu ada beberapa aspek yang mesti kita perhatikan didalam merencana. Diantaranya adalah: apafungsi barang yang kita ciptakan, bagaimana bentuknya, bagaimana kesatuan unsur-unsurnya, dan bagaimana gayanya (styling) yakni unsur tambahan setelah bentuk dasarnya ditemukan. Apabila keempat aspek ini sudah ditemukan maka nilai estetiknya sekaligus sudah tercipta secara langsung.

4. Aspek Fungsi.

Pengertian mengenai fungsi paling mudah dipahami sebagai salah satu aspek yang sangat erat hubungannya dengan keindahan (beauty). Sebab bentuklah yang menentukan nilai estetiknya. Seorang arsitek Amerika yang terkenal Louis Sullivan mengeluarkan azas yang sangat penting didalam disain yakni " form follows function ", atau bentuk mengikuti fungsi. Azas ini sangat penting oleh karena setiap produk barang yang diciptakan sekarang mengikuti azas ini. Didalam setiapperencanaan selalu memperhitungkan mengenai fungsi, untuk apa fungsidari setiap bentuk ciptaan itu tidak berlebih-lebihan. Contoh yang paling mudah difahami barangkali adalah kursi. Untuk menciptakan bentuk kursi yang sesuai dengan azas yang diatas, diukur lebar pinggul orang, tinggi sanderan tangan, tinggi lutut sehingga ukuran kursi itu tidak berlebihan dan tidak pula kurang. Kemudian difikirkan pula apakah kursi itu untuk bar hotel, tempat duduk untuk membaca, utnuk santai, untuk makan dsb. Bentuk kursi bar hotel dibuat sedemikian rupa bentuknya agar orang tidak betah duduk berlama-lama disam, agar orang minum dengan cepat kemudian untuk digantikan oleh orang lain yang haus. Kursi makan dibuat sedemikian rupa sehingga tidak mudah kotor dan tidak menegangkan urat-urat perut. Dan berbeda pula bentuknya dengan kursi untuk bersantai. Dan sekarang kita melihat bermacam macam bentuk yang sesuai dengan fungsinya masing-masing. Bentuk kursi bar tinggilangsing, kursi santai rendah dan kursi makan agak geometris.,dan berfariasi bentuk yang lain.

Brangkali bentuk alamiah merupakan disain yang palin baik yang sesuai dengan azas " form follows function ".. Coba perhatikan bentuk bunga yang fungsinya untuk reproduksi, bentuk sayap burung yang fungsinya untuk terbang bentuk berbagai macam binatang-binatang, kita akan terpesona bahwa disain alam sangat sempurna sekali.Dan seringkali disain alam ini ditiru oleh manusia bentuknya untuk menciptakan disain baru misalnya pesawat terbang, kapal selam, alat sunt ik,radar, konstruksi bangunan dsb sebatang pohon sebetulnya adalah ahli bangunan dan arsitek yang paling baik yang tidak pernah " sekolah ".

Didalam perencanaan (disain), hendaknya diperhatikan aspek fungsi dari setiap bentuk yang diciptakan. Dan disini pulalah letaknya perbedaan setiap bentuk yang kita ciptakan, mobil tidak akan sama dengan bentuknya dengan kursi, Vas bunga tidak akan sama bentuknya dengan keranjang sampah karena fungsinya berbeda-beda satu sama lainnya.

5. Form (bentuk)

Merencana adalah suatu proses mewujudkan sesuatu ide yang timbul dari kegunaan sesuatu: bentuk (form) adalah yang dapat dilihat, secara nyata. Dan bentuk terdiri dari berbagai umsur seperti unsur garis, warna, proporsi, tekstur . Unsur-unsur ini disusun sedemikian rupa sehingga menciptakan sesuatu bentuk yang unik, Unsur-unsur ini dapat terorganisir dengan baik dan dapat juga kacau susunannya. Sesuatu bentuk yang baik adalah bentuk yang berkepribadian dan berfungsi. Seorang perencana dapat menciptakan sesuatu bentuk yang optimal bervungsi. Sebuah keranjang dapat ditentukan bentuknya berapa berat bebab yang dapat dipikulnya, dan untuk membawa apa dan kemana akan dibawa. Kemudian terahkir baru dibicarakan bagaimana teknis pembuatannya serta bahannya.

6. KESATUAN (UNITY)

Kesatuan adalah kata lain untuk keselarasan (harmoni. Kesatuan adalah susunan atau gabungan berbagai unsur, bagian (parts) yang harmonis. Akan tetapi berbeda masalahnya dengan seni murnidimana setiap unsur kesatuannya dapat kita lihat dengan jelas. Maka didalam seni pakai kesatuan ini kita lihat dari bentuk yang kompak, kadang-kadang bagian-bagiannya tidak terlihat seluruhnya, oleh karena ada didalam barang tersebut. Kesatuan ini juga menentukan aspek keindahannya.

7. GAYA (STYLING)

Gaya, dekorasi, ornamentasi, adalah nama yang berbeda yang dibicarakan/dipermasalahkan apabila sesuatu disain sudah hampir jadi. Apa bila bentuk dasar sesuatu disain sudah ditemukan, kemudian orang memasalahkan gaya. Bagaimana gayanya, bentuk dasar keranjang adalah sama tetapi gaya/ modenya berlain-lainan, demikian juga bentuk tas, bentuk mobil, bentuk rumah dsb. Gaya ini tergantung dari mode yang sedang berlaku.

Ornamen adalah unsur tambahan saja, dari suatu disain Apabila suatu bentuk dasar (structural design) sudahditemukanmaka timbul usaha baru untuk membuat ornamen ((hiasan). Oleh karena unsur ornamen hanya unsur tambahan saja, usaha ini jangan terlampau berlebih-lebihan, seorang gadis akan menonjol dengan kecantikan "alamiahnya" tetapi dengan terlalu banyak "bedak" maka luntur kecantikannya itu. Jadi dekorasi tidak boleh berlebih -lebi han.

8. Unsur keindahan didalam disain.

Disini kita akan membicarakan beberapa elemen dasar yang dapat kita olah didalam mendisain. Unsur-unsur tersebut adalah unsur garis, massa, ruang, keseimbangan, proporsi, kontrast, dan warna . Unsur-unsur ini dapat melengkapi unsur lain, atau salah satu unsur mungkin lebih menonjol dari uns ur yang la in.
Keindahan (nilai estetik) harus kita lihat sebagai ramuan dari semua unsur-unsur. Dalam hal ini kita harus hati-hati didala m mengambil kesimpula n, bahwa tidak ada rumusan, atau ramuan yang ajaib untuk menciptakan disain yang sempurna. Yang ada ialahbahwa kita berusaha memanfaatkan semua unsur itu dalam mencipta.

8.1 GARIS

Unsur dasar dari sebuah bentuk adalah garis, sebab sebuah bentuk dibatasi oleh garis baik secara illusi maupun secara nyata. Garis yang nyata dapat kita lihat diatas bidang datar berupa garis grafis. Biasanya seseorang menciptakan garismemperhitungkan dari mo na dan

untuk apa fungsi garis itu dalam sebuah disain , kadang-kadang garis itu hadir sedemikian rupa karena penyusunan material disain. Dan garis itu memiliki karakter tertentu yang menggambarkan kapribadian. Pecah, cepat, sedih, berma in-main, lunak, keras, adalah beberapa karakter yang dapat diungkapkan oleh garis-garis itu.
Garis-garis yang muncul oleh karena penyusunan material adalah garis-garis khayal (garis illusi). Tiga ha l yang dapat menimbulkan garis illusi adalah: oleh karena perbedaan warna, perbedaan tekstur, perbedaan material.

8.2. Massa

Massa adalah salah satu unsur yang memberi image berat-ringan atau padat. Massa yang posotif terlihat pada bentuk tiga dimensi. Massa tidak hanya terlihat pada suatu kesatuan disain, sebuah elemen yang tersendiri dalam sebuah disain dapat memiliki massa yangtersendiri pula. Seorang disain akan berusaha untuk mengharmoniskan berbagai elemen tadi.

8.3. RUANG (SPACE)

Pengertian me ngenai ruang biasanya dihubungkan orang dengan udara. Atau ruang yang ada disekitar objek, biasanya pula obkjek ini berbentuk 2/3 dimensi.
Pengertian ruang didalam disain agak berbeda dengan yang dia tas. Objek disain yang memiliki massa yang padat disebut ruang positif, sedangkan ruang disekitar objek disebut ruang negatif.
Ruang dalam hal ini memega ng peranan penting untuk menentukan nila i estetik, dan juga memiliki hubungan yang erat dengan unsur lainnya.

Pengertian ruang didalam disain dua dimensial sangat relatif, contohnya ada lah gambar dua wajah yang berhadapan, bisaberbentuk jambangan.

Dalam disain tiga dimensi hal ini tidak mungkin terjadi kecuali kita memiliki kaca mata khusus didalam melihat sebuah benda. Image visual akan berubah oleh kaca mata tersebut. Akan tetapi benda itu sendiri tidak akan berubah bentuk ruangnya.

8.4. Balans (keseimbangan)

Keseimbangan adalah manifestasi dari "equilibrium", yang timbulkan rasa "menyenangkan" dan "rasa aman" bagi pengamatnya. Didalam teknik, keimbangan itu diukur menurut berat.
Pada dasarnya keseimbangan berat menimbulakan efek psikologis tertentu kepada pengamatnya, sebaliknya apabila seseorang mengamati keseimbangan maka timbul imaji "bera t" . Sebagai contoh misa lnya sebuah bida ng yang diisi dengan dua unsur bentuk yang berbeda besarnya, keseimbangan bisa terjadi apabila bentuk yang kecil dapat mengimbangi bentuk yang besar, dengan memberi warna yang gelap pada bentuk yang kecil. Warna berat memberikan efek ya ng berat .
Keseimbanga n sangat penting dalam sebuah disain. Ada dya macam bala ns yang terdapat dalam disa in yakni balans simetri dan balans asymetri.
Balans simetri paling muda h untuk dipahami, dimana kalau sebuah disain memiliki bagian kiri dan kanan yang sama bentuknya apabila ditarik garis tengah sebagai sumbu. Respon emosional dari balans ini adalah rasa kemantapan dam kesetabilan yang tetap.

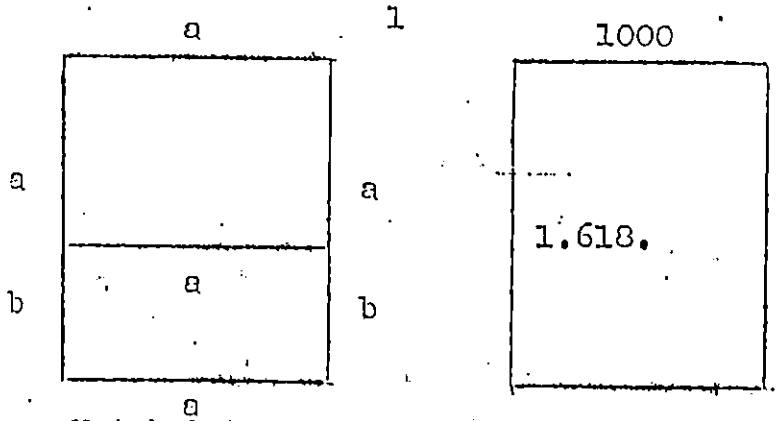
Keseimbangan asymetri sering kali disebut keseimbangan yang gaib (keseimbangan khayal), sebab keseimbangan ini memberi stimuli gerak dina mis dan respon emosiona l kepada pengamat nya .
Contoh disain yang menggunakan keseimbangan asymetris misalnyamesin ja hit, s enapa ng angin, mesin bubut dsb.

8.5. PROPORTION

Proporsi adalah hubungan antara dimensi keseluruhan dengan dimensi elemen atau bagian dari sebuah disain (bentuk).
Proporsi adalah suatu elemen yang penting didalam menentukan keseimbangan dan kesatuan .
Proporsi sederhana dapat dipakai untuk mengontrol bentuk geometris lengkung, segiempat, segi tiga dsb

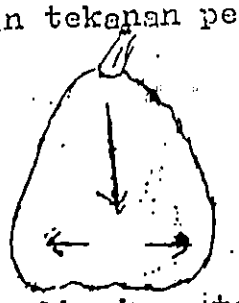
Teori mengenai proporsi sudah dikembangkan oleh orang sejak lama yakni sejak zaman Yunani kuno zaman Phythagoras dan plato untuk membangun kuil-kuil di Yunani. Konsepsi mereka tentang suatu bentuk yang indah (estetis) dihubungkan dengan bentuk-bentuk yang geometris yang disebut mereka dengan hukum geometris " golden ratio" atau golden rectangle (ukuran keemasan dan segi empat keemasan).
Ukuran itu berdasarkan perhitungan sebagai berikut:

$$\frac{a+b}{a} = \frac{a}{b} = \frac{1.618}{1}$$



Untuk beberapa abad lamanya dan beberapa waktu berselang proporsi ini masih dipakai orang untuk mengukur benda-benda alam, proporsi benda-benda ciptaan. Dan jika dijabarkan dengan angka proporsi ini adalah sbb: 1 : 3 : 5 : 8 : 11... dst.
Dengan perkembangan ilmu pengetahuan maka timbullah berfariasi hukum proporsi baik melalui matematik maupun melalui hukum fisika.

Berbagai pengetahuan baru untuk memahami proporsi ini timbul setelah diadakan penyelidikan terhadap disain alam. Bentuk-bentuk alamiah ternyata proporsisinya ditentukan lebih banyak oleh kesaimbangan daya tarik bumi dan tekanan permulaan.



Proporsi buah jambu .
(disain alam).

Seorang disainer tentu saja ada yang mengukur persoalan ini sampai kepada hal yang rumit dalam menciptakan bentuk, tetapi dasar utamanya dalam mencipta mematuhi prinsip-primsip pokok diatas, seperti hubngan FUNGSI, KESATUAN " dan Form dalam mencipta.

8.6. KONTRAS

Adalah suatu kenyataan bahwa paper ini bisa kita baca karena ada kontras antara huruf yang hitam dan kertas yang putih, sehingga dapat dibaca.Kontras adalah salah satu unsur yang melengkapi suatu disain dan penting peranannya apabila kita perlu mengadakan penekanan penekanan yang penting terhadap suatu bagian.

8.7. W A R N A

Warna dianggap orang sebagai salah satu unsur yang menentukan sekali keindahan sesuatu bentuk. Apakah sebenarnya warna ? Bagai manakah peranan warna didalam disain.?

Setelah warna spektrum ditemukan oleh Newton (warna Pelangi) Dan Sir David Brewster sekitar tahun 1937 memformulasikan teori warna pigmant (warna campuran warna primer, secunder, secunder, dan tertier. Mdka Munsell mulai mengadakan penyelidika n th. 1912 di Boston U.S.A. tentang warna yang melahirkan teori warna yang di pakai sebagai standart dalam setiap perencanaan jaman sekarang.

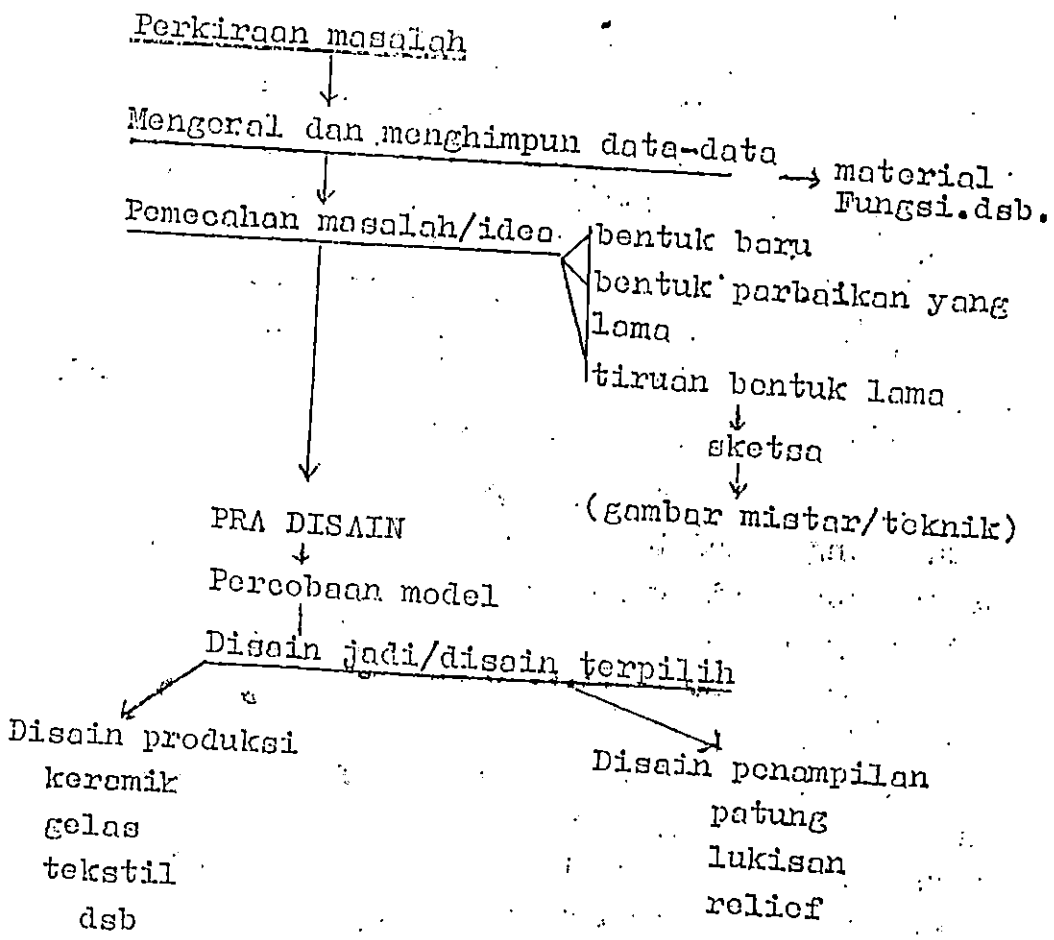
.....

(sTp)

9. TAHAP - TAHAP MERENCANA

Disainer adalah seorang perencana; Tugas seorang disainer adalah menelusuri proses pembuatan sesuatu barang sampai selesai. Dengan kegiatan ini berarti bahwa ia terlibat dengan proses penciptaan mulai sejak sketsa sederhana sampai kepada gambar kerja, bestek dan pekerjaan di workshop .

Sebagai seorang pencipta terlebih dahulu ia tentu memiliki gagasan atau ide apa yang hendak ia ciptakan, apa bahannya dan fungsinya, Dasar-dasar pengetahuan diatas seperti pengetahuan mengenai bentuk, fungsi, kesatuan dan sebagainya harus dia kuasai betul. Demikian juga mengenai teknik menggambar bentuk tiga dimensional seperti gambar teknik atau gambar mistar untuk menjelaskan detail dari disainnya. Tahapan-tahapan mendisain itu dapat kita lihat pada bagan di bawah ini.



Lampiran I. Range produksi, group produksi, produksi,

RANGE PRODUKSI	GROUP PRODUKSI	PRODUKSI
1. KAYU	: 1.Barang-barang	: 1.1.Alat-alat rumah
		1.2.rak piring
		1.3. dsb
	2. ukiran	2.1.hiasan dalam rumah
		2.2.hiasan luar rumah
	3. patung	
	4. meubel	4.1. tempat tidur
		4.2. meja makan
		4.3. kursi
		4.4. buffet
		4.5. meja hias
		4.6. meja tamu
		4.7. dsb
2. KULIT	1. tas	
	2. sepatu	
	3. barang kulit	
III. LOGAM	1. Barang besi	
	2. aluminium	
	3. kuningan	
	4. emas	
	5. tembaga	
	6. d s b	
IV. TEKSTIL	1. tenun	
	2. batik	
	3. rajut	
	4. Boordur	
V. ANYAMAN	1. anyaman bambu	
	2. anyaman rotan	
	3. anyaman ijuk	
	4. anyaman plastik	
	5. anyaman nylon	
	6. anyaman sabut	
	7. anyaman pandan	
	8. d s b.	

E PRODUKSI	GROUP PRODUKSI	PRODUKSI
. TANAH LIHAT		1. bahan bangunan
		2. Tembikar
		3. keramik
. KERTAS		1. hiasa n
		2. payung
		3. d s b
I. LAIN-LAIN		1. karet
		2. batu
		3. rambut

ge produksi : sekumpulan produksi yang berasal dari satu macam bahan atau mempunyai cara pembuatan yang sama

:p produksi : sekumpulan produksi yang bercorak tertentu dimana terutama dipakai suatu bahan mentah tertentu,

ksi : suatu hasil barang dibuat dari suatu bahan didalam group produksi tertentu diatas.

(gTp)

Introduction

As befits a nation of daredevils, pirates, stiff upper-lips, landowners, shopkeepers, engineers, chemists, professors, psychiatrists, farmers and Working Men, the language of the English is not equipped with very efficient methods for describing the various arts. Graphic art usually resorts to musical terms when trying to express itself in literature, and vice versa, whilst architecture has given up the struggle entirely and expresses itself in terms of utility and engineering. So that if anyone, at a party, says to me, 'And what do you do?' I cannot find the words to explain the nature of my vocation, and usually mumble, 'Something in the City.' The appellation 'Commercial Artist' is not impressive and conjures up visions of a poor down-trodden hack, badly clothed and worse educated, drawing bobbin labels and balloons and rude postcards for cigar-chewing spivs on a broken stool in a seedy corner of Fleet Street. 'Humorous Illustrator' is presumptuous (as well as limiting) because my sense of humour invariably differs profoundly from that of my questioner. 'Industrial Graphic Artist' would be received, perfectly correctly, as a snubbing and facetious riposte, whilst 'among other activities, a Paper Sculptor' would have the effect, with reason, of causing one's sanity to become suspect. For, although paper sculpture has been so popular in window and exhibition display, it has never been heard of by most of the general public, not even by those with some pretensions to an acquaintance with the world of Art. Recently when I gave a lecture to an arts club on 'Paper Sculpture', the entire membership turned up eager to discover what this mystery title could possibly mean. I mention this because it seems strange that no one, so far as I am aware, has yet treated paper sculpture as a medium for serious or fine art expression. Presumably its ephemerality has something to do with it, though there are several ways of overcoming this (I can envisage a structure of gossamer-like complexity, sealed in a plastic vacuum bubble and floating on a granite plinth in a favoured position at the Venice Biennale).

To me, the unique quality of paper as a sculptural medium lies in the design problems and discipline which its fundamental limitations impose upon the artist. Paper can assume only simple forms—cones, cylinders, box shapes and curved scored shapes. It is two-dimensional, very frail and has a natural springiness. The artist's job is to utilize these special properties in the interpretation of the compound curves, spheres, solidities and ponderesities that go to make the everyday world of visual experience. These limitations demand the use of all the ingenuity, sense of design and form that the artist can conjure up, and are peculiar to paper sculpture. Wood, metal, clay and stone can all be flogged into the most faithful and naturalistically representational shapes, but paper can not.

In the following pages I have listed the tools and equipment which I personally use, described some of the basic principles of paper sculpture construction, and reproduced as representative

a collection of the best work being done in all parts of the world as I have been able to muster in a year of research, together with short biographies and notes on methods of working where these have been available. In addition I have reproduced a chronologically arranged collection of my own productions, a diagrammatic analysis of one of my most recent models, and a step-by-step illustrated construction guide of one of my portrait models made under the American, Canadian and British patents. I hope that this material, together with the historical passages, will be helpful to students and may even encourage someone to take seriously this Cinderella of sculptural mediums.

In the sections on China, Mexico and England I have touched on the history of paper manipulation which paved the way for the more modern art of paper sculpture. It was not until just before the second World War that this medium began to attract designers in the western world. I myself was one of the first to experiment in this direction, but I think it is commonly accepted that the true pioneers of the modern form were of Polish nationality. However that may be, there is no doubt that some of the most skilled practitioners in the world reside in England. Up to the present time, the art has been used almost exclusively for commercial purposes, for exhibition display, window display and, to a lesser extent, illustration (in photographed form). It is at present at a cross-roads, and is in danger of being vitiated by bad work, a great amount of which is to be seen used as window display. But it is undoubtedly a legitimate art-form, and one with unique appeal.

ACKNOWLEDGMENTS

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I am also indebted to the authors of the following works:

The History of Silhouettes by E. Neville Jackson (*The Connoisseur*, 1911).

The Travels of Marco Polo, translated and edited by Sir Henry Yule, (John Murray, 1903).

Aztec and Maya Papermakers by Victor Wolfgang von Hagen (J. J. Augustin, New York).

Paper Sculpture by Arthur Sadler (Blandford Press, 1951).

A History of Valentines by Ruth Webb Lee.

The Religious System of China (1892).

The Happy Life, a modern Chinese paper-cut

China

According to Chinese tradition, the invention of paper is ascribed to Tsai-Lun, Minister of Agriculture under the emperor Ho-ti, in A.D. 105. Previous to this epoch-making date silk and wood fibres were used for writing upon, but after Tsai-Lun's discovery a vast variety of substances, including mulberry trees, rags, fishing nets, hemp, bamboo shoots and osiers, were grist to the Chinese paper mills. Methods of manufacture apparently differed little from those employed almost until the present day. John Evelyn in his Diary dated 22nd June 1664 mentions:

'One Tompson, a Jesuit, showed me such a collection of rarities, sent from the Jesuits of Japan and China to their Order at Paris, as a present to be reserved in their repository, but

brought to London by the East India ships for them, as in my life I had not seen . . . a sort of paper very broad, thin, and fine, like abortive parchment, and exquisitely polished, of an amber yellow, exceeding glorious and pretty to look on, and seeming to be like that which my Lord Verulam describes in his Nova Atlantis; several other sorts of paper, some written, others printed . . .'

and again on 24th August 1668:

'To see my Lord of St Albans House at Byfleet . . . thence . . . to the paper mills, where I found them making a coarse white paper. They cull the rags which are linen for white paper, woollen for brown; then they stamp them in troughs to a pap, with pestles, or hammers, like the powder-mills, then put it into a vessel of water, in which they dip a frame closely wired with wire as small as a hair, and as close as a weaver's reed; on this they take up the pap, the superfluous water draining through the wire; this they dexterously turning, shake out like a pancake on a smooth board between two pieces of flannel, then press it between a great press, the flannel sucking out the moisture; then, taking it out, they ply and dry it on strings, as they dry linen in the laundry; then dip it in alum water, lastly, polish and make it up in quires. They put some gum in the water in which they macerate the rags. The mark we find on the sheets is formed in the wire.'

Harvest Celebrations, designed by Chang Lang and cut by Liu Tun-chin of Hupeh province

and we may imagine that, except for the watermarks, these methods were not unfamiliar to the remarkable Tsai-Lun.

Knowledge of paper-making spread from China to Korea about A.D. 610 and thence to Japan about A.D. 625. It also reached the Arabs on the capture of Samarkand in 707 and was carried into India at the time of the Mohammedan invasion.

The oldest known paper in the world which can be dated was made in A.D. 406, in the Stein Collection of the British Museum, though other undated ones there may be older still.

Almost from the date of its invention the Chinese used paper as a constructional medium, and a great deal of interesting information has come down to us on its use in connexion with various religious rituals. De Groot, writing in 1892, refers to puppets, made of paper pasted on bamboo splints, placed at the feet of the dead. These puppets were known as 'feet slaves' and their purpose was to act as servants to the deceased in the world of Darkness. There is another reference to the use of a small portable furnace, called Kim-Lo (furnace to burn gold), which was placed in front of the death bed, and within which sheets of paper coated with silver were burned, being thus transformed by a fire into currency suitable for the use of the departing spirit on its journey.

Until the end of the last century it was customary in China to make paper models of houses, furniture and other everyday possessions including money which were burned for the use of the dead. This custom was most probably a survival from ancient times when real property was destroyed, and the two paper 'feet slaves' a relic of the days when real slaves, concubines and wives were buried in the tombs of the deceased.

Sedan chairs made of paper and bamboo for the use of the departing soul were a not unfamiliar sight outside the houses of old China. The carrying poles were fixed to the shoulders of bearers, also of paper, each of whom was equipped with paper money as 'advance pay' to ensure against possible slackness in their duties. Special shops existed for the sale of paper 'treasury money', sold in packets of a hundred sheets each, for the dead. These were packed in trunks of paper and bamboo, sealed with paper padlocks and placed under the care of two paper puppets, who were in turn watched over by a paper 'treasury officer'. After the funerary rites, each of these paper images was given necklaces of 'advance pay' and consigned to the flames. The Chinese believed that every birth on earth represented the release of a soul from Hades. This release was only granted on payment of a large ransom to Yama and as souls were usually very poor they had to borrow from their fellow souls in order to be reincarnated on earth. Thus, on their eventual return to Hades, they were assailed by hosts of creditors and dutiful kinsmen naturally ensured the speedy discharge of debt by large gifts of bullion.

Paper flowers and other objects, as well as the feet slaves, were placed in the coffins. Also upon the corpse were placed two pairs of trousers, one large and one small, both stuffed with folded ingots of gilded and silvered paper.

A 'paper scatterer' preceded the funeral procession, strewing paper money in front of the coffin, to distract evil spirits who might otherwise rob the corpse. Included in the procession

Opposite: Jointed and coloured parchment puppet for the Chinese shadow-theatre

were paper lanterns to light the spirit on its way and a pavilion of bamboo and paper containing an image of an appearance so horrific that the whole host of evil spirits was paralysed with terror (a blood-red face, three eyes and a purple beard ensured that unsuspecting humans were taken the same way). After the deceased had been removed for burial an 'auspicious personage', usually an acquaintance of the family reputed to be a happy person because of her great age and many sons, stood upon the spot where the coffin had rested to confound the unpleasant spirits who would otherwise frequent the place. She wore no mourning, but sported sprays of gilt paper flowers in her hair to increase the luck promoted by her person.

When Marco Polo was at Sachiu in 'the worst part of the Sandy desert' he remarked:

> 'And you must know that all the idolaters in the world burn their dead . . . all the minstrelsy in the town goes playing before the body; and when it reaches the burning-place the kinsfolk are prepared with figures cut out of parchment and paper in the shape of men and horses and camels, and also with round pieces of paper like gold, and all these they burn along with the corpse, for they say that in the other world the defunct will be provided with slaves and cattle and money, just in proportion to the amount of such pieces of paper that have been burnt along with him.'

The Chinese also, from early times, used pulped paper (papier mâché) as a medium for modelling; and images of Buddha in this substance have come down to us from the third century.

Turning, perhaps not before it is time, from the dead to the quick we find in present-day China, as in Poland, a lively revival of the ancient art of paper-cutting. Dating at least from the twelfth century A.D. these paper-cuts are often to be seen decorating the paper-covered windows in the rural districts of North and North-west China, where they make bright splashes of colour by day and at night turn the windows into intricate shadow silhouettes. The subjects embrace the whole animal and vegetable kingdom, also folk tales, traditional drama and, as Arnold Bennett might have said, 'the dailiness of life'.

When scissors are used the usual practice is to cut about four at a time. When knives are used the paper is nailed down in blocks of sixty to seventy sheets and cut vertically with an assortment of gouge and chisel shape knives. In the case of coloured paper-cuts, water-colour dyes are floated on the top sheet so that the colour soaks through, tinting the whole pile. It is difficult to understand how cuts produced by such a mass-production method can retain their subtlety, particularly those at the bottom of the pile, but I have yet to see one of markedly inferior quality. The knife-cuts are more elaborate in technique than the scissor-cuts and are often used to decorate shoes, caps, cushions and table-cloths and other household articles,

A sister art of the paper-cuts is that of the shadow-theatre puppets which can be traced back to the Sung dynasty and is still flourishing today. The figures are cut with scissors or knife from a parchment of donkey-skin. Hair, facial profiles, embroidery, leaves and ferns are all expressed in delicately cut tracery. The movable arms and legs are worked by threads from bamboo rods, rather as the three-dimensional puppets of the Western World, and the parchment is tinted with brilliant translucent colours which glow like coloured glass when projected by lanterns against the paper theatre-screen.

Still another traditional art in China is that of paper-folding. Just as we, when children, may have made paper caps, boats, darts and bangers (to say nothing of my favourite, the chewing pig), so Chinese children are taught by their elders to make monkeys, pin-wheels, three-piece living-room suites, fishing boats and pagodas, to name only a few from the apparently complete range of every-day and dreamt-at-night objects available to the dexterous Oriental infant. The traditional rules of the art are even more restricting than those laid down by the Japanese practitioner, Mr Yamaguchi (featured later in this book). Only one piece of paper may be used and only one pair of hands; no paste and no knife or scissors.

Mexico

The period in which the Middle American civilization began to dawn has not been established with any certainty, though it is known that by 500 A.D. the culture of the Mayas was reaching its peak. The mysterious stone cities of the jungle had been built; trade, commerce, art and religion had reached an advanced state of development; astronomy had become an exact science.

The Mayas also developed an increasingly elaborate system of hieroglyphic writing, necessitating the invention of some convenient material upon which they could record their discoveries. Bark was found to be most suitable and paper made from this substance eventually surpassed Egyptian papyrus in fineness and durability.

The Mayan civilization, after a long period of decline, was succeeded by that of the Toltecs, who improved the bark paper even further. These people were in their turn eclipsed by the rise of the Aztecs between the twelfth and fourteenth centuries A.D.

The Aztecs extended their influence throughout much of Middle America, taxing and trading with conquered tribes and using paper increasingly for commercial purposes. It also began to

assume a religious and ceremonial significance, to collect in accordion-like bundles in the great libraries at Texcoco, and to become in itself an article of tribute.

It is believed that the present-day bark paper of the Sumus is prepared by a method similar to that used by the Aztecs. Sumu Indians use wild fig trees for the purpose, taking a twenty-foot branch about ten inches in diameter and peeling off the bark in one piece. This strip of bark is soaked in water for some days, then scraped and dried in the sun. After this it is soaked again and then beaten over a polished log with a ridged wooden mallet. A few hours of this treatment transforms the crude bark into a flexible sheet called Amat by present-day Indians.

Knowledge of the ceremonial use of paper among the Aztecs is due to the investigations of a Franciscan monk, Bernadino de Sahagún, who taught at the Indian College of Santa Cruz in Tlaltelolco during most of the sixteenth century A.D. In his great work *History of the Things of New Spain* he tells us that Yiacatecutli, the god of merchants, was honoured by offerings of paper with which his statues were covered. The statue of Napatecutli, god of the rush-mat makers, was regularly decorated with a black-and-white paper crown, a water-lily in the left hand and a flowery stalk in the other, the flowers being made of paper. Some of the stories that come down to us from de Sahagún leave nothing to be desired in the way of blood and horror. The gods of the waters called Tlaloques, he tells us, were honoured by the slaughter of children on seven mountain tops, the victims being dressed in differently coloured papers, one colour for each mountain.

De Sahagún also describes the use of paper in the various monthly festivals. For example, in the month of Toxcatl an image of the god Vitzilopuchtli was made of dough crowned with a basket bearing a paper device. Young girls danced with paper banners around the hearth-fires and the priests wore rosette-like discs of paper on their foreheads.

In the month of Etzalalqualiztli was held the feast of Tlaloques. At dawn the priests bedecked themselves in their robes and placed on their backs great shield-shaped paper flowers, with more paper flowers at the backs of their heads. Paper, plumes and precious stones were used as offerings at this festival, together with the hearts of the sacrificed victims (presumably the children of the mountain tops).

Sahagún describes the festivals of several other months besides those mentioned above, each involving the shedding of blood and the consumption of paper to a greater or less degree. He also mentions the use of paper in funerary rites. The dead body, with its legs doubled up under it, was dressed with 'papers' previously prepared by the ancients and the official paper cutters. Papers were placed before the body with the injunction, 'See, here is with what you are to travel between two mountain ranges which are adjoining one another.' More papers were placed before it with the words, 'See, here is with what you are to pass the road which is guarded by a snake.' Still more papers with the words, 'See, here is with what you are to pass the road over which the green lizard roams.'

When the deceased had completed his journey he was to give to Mictlantecutli, the devil, the papers which he carried.

The Aztecs were not unique in cultural advancement and by the middle of the fourteenth

century many Middle American tribes had the secret of paper making, together with hieroglyphic writing, almanacs and sacred calendars.

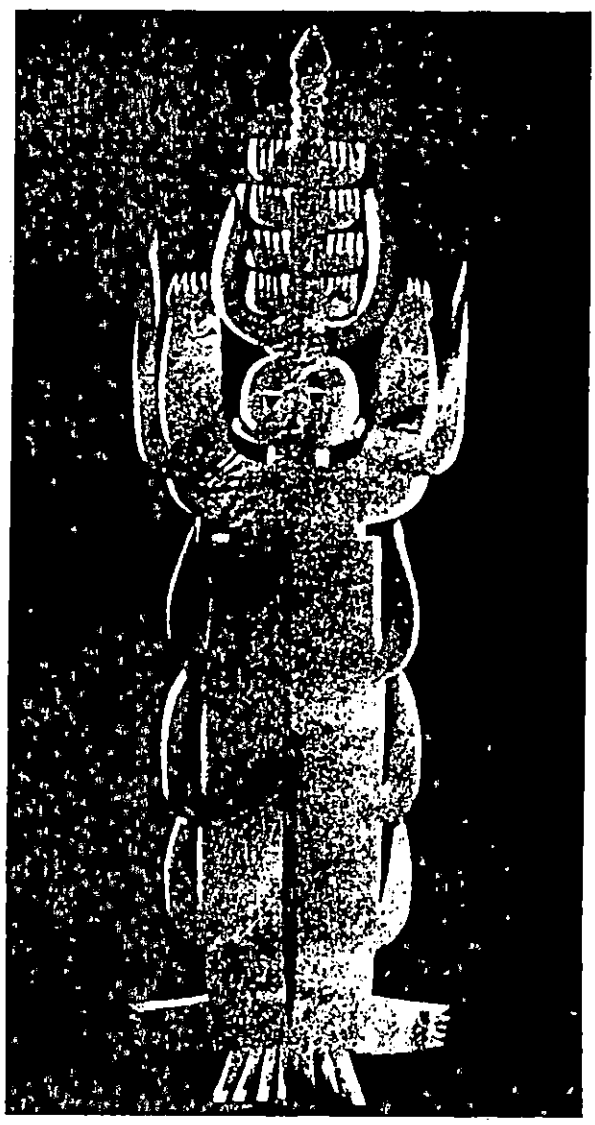
But they were all destined for extinction, and in 1502 Cristobal Colon made his first contact with the outposts of Mayadom.

It is interesting to speculate whether the use of paper in modern Mexican festivals may not have its origin in the legends left behind by the earlier civilizations. On page 246 of *A Treasury of Mexican Folkways*,* for example, the illustration on page 13 is reproduced, with the description:

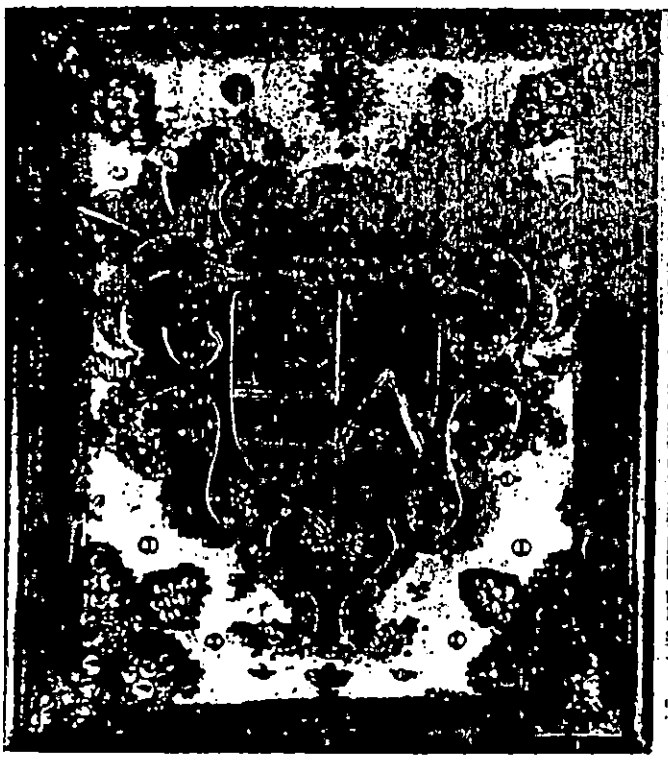
'In Oaxaca City the fiesta to la Virgen de la Soledad, the Virgin of the Lonely, on the eighteenth of December, is one of the loveliest of all those celebrated in cities. She is the Patroness of the State, and the natives come to visit her from all its mountains and valleys, with gifts and sorrow-laden hearts. She is also the Patroness of the sailors, who have presented her with marvellous pearls for her crown.

'For several nights previous to and on the eighteenth, there are calendas. These are religious processions from the various barrios, men, women and children taking part. They carry Japanese lanterns on poles, candles and some very beautiful figures of birds, a boat or some other objects wrought of flowers, leaves or coloured paper.'

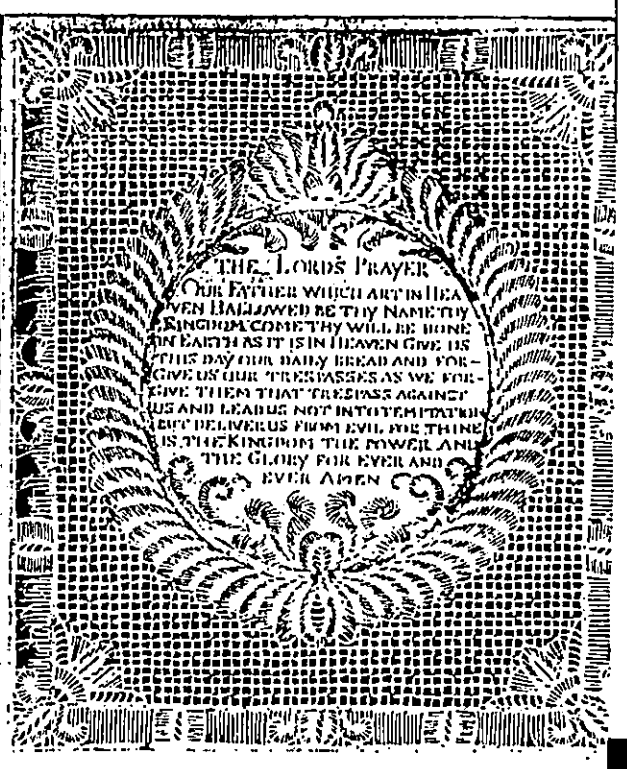
*By Frances Toor (Crown Publishers, New York, 1947).



'The Spirit of the Banana Plant'
cut from emerald green tissue paper and used in fertility rites by the Otomi Indians



Unidentified shield inscribed 'Miss Mary Pyndar'
second half seventeenth century



Cut by T. Hunter, 1786
These two examples are at the Victoria & Albert Museum
Crown copyright

Mainly England

A letter written between the years 1216–22 is the oldest authentic example of the use of paper in Great Britain. It was written by Raymond, son of Raymond, Duke of Narbonne, to Henry III of England and is therefore probably of French origin. It is recorded that paper was manufactured in the south of France (where there is still a thriving industry) as early as 1189, and was exported to England and the Low Countries.

So far as is known, the earliest British paper mill was built in 1490 in the vicinity of Stevenage. This was the Sele Mill, owned by John Tate, son of John Tate, Lord Mayor of London. Tate's mill was visited by Henry in 1498 and again in 1499 (so interested was the king in this new and novel industry), but even though the paper was of a quality excellent enough to be used for the 1498 edition of Chaucer (watermark: an eight-pointed star in a double circle), the mill was undersold by foreign competition and passed out of the family on Tate's death in 1507. Another mill

was started half a century later at Fen Ditton, and in 1588 John Spielman founded a much larger mill in Dartford, Kent (watermark: a jester with cap and bells). Many more mills were erected in the seventeenth century and the first patent in this country was applied for in 1665.

Paper, it will be realized, was far from being the common everyday commodity of today. It was in fact all made by hand until the middle of the nineteenth century and was, like glass for windows, a costly and valuable luxury. (Even now with modern quantity-production methods, a 20 × 30 inch sheet of good hand-made paper may cost five or six shillings.) Consequently it was not used, as today, frivolously for wrapping up fish and chips, printing fearful details of horrible murders and vice, advertising competitive but otherwise identical products and writing furious letters to *The Times*, but respectfully and with great deliberation and careful thought. A small boy would think twice before he made a paper cap or kite; a little girl three times before she embarked on a paper chase. Rather she might do as Mr Pepys's sister Pall, who one memorable May 4th sent a 'baskett . . . made by her of Paper, which hath a great deal of labour in it for countrie innocent work . . .' And so from the mists of time in the seventeenth century comes down to us, not sister Pall's paper basket, but an *Unidentified Shield of Arms* (*azure, two bars or, in chief three escallops of the second*) *impaling the Arms of Pyndar. The shield*

An eighteenth century paper-sculpture mounted in a glazed frame; in the possession of Barbara Jones

Carduus eriophorus
Cotton headed Thistle

fashioned from silk and rolled strips of coloured and gilded paper, surrounded by elaborate mantling and decorative borders also of rolled paper. Mounted on silk in a box frame, English, second half of seventeenth century. Inscribed on back Miss Mary Pyndar.

This item, which resides at the Victoria and Albert Museum, London, was originally fitted into some panelling at Levant Lodge, Earls Croome. Was it made, or merely owned, by Mary Pyndar? No one seems to know.

But a great deal is known of another Mary, born in 1700, a few years after the Shield of Arms was fitted into the panelling of Levant Lodge. This was Mary Delaney, daughter of Bernard Granville, who after an unhappy first marriage became Mrs Patrick Delaney in 1743.

Mrs Delaney, being something of a socialite, was not at all the type of woman whom we should expect to take to paper cutting in her old age, but it appears that this work absorbed all her attention for the last ten years of her life. She was about seventy-five when she began what she called her 'Paper Mosaick', which had a great success in the fashionable world and, judging by the memoirs and correspondence of some celebrities, it was a favourite topic of conversation in her day. Mrs Delaney devoted herself to the delineation of flowers exclusively and her work shows a very sound botanical knowledge. The most minute details were carried out and many of the thousand specimens she made are still in perfect preservation, forming a striking monument to her industry and ingenuity.

Mrs Delaney's flower mosaics were built up on a black ground and were made of fine slivers of differently coloured paper painstakingly applied in layers. Modelling and shading were all suggested by variations in the colours, one layer of paper being pasted over another. Veins in leaves, stamens and other fine details were all separately reproduced in minute paper pieces. The only materials were paper and gum and her only tool a pair of scissors.

In the footsteps of the talented and astonishing Mary Delaney followed another paragon of feminine industry. This was Miss Amelia Blackburn. The two women were very different in personality. Whereas Mary in her younger days was a gay and popular woman-about-court, poor Amelia spent her life quietly as a chronic invalid. But in my view her talents rise above those of Mrs Delaney. For Mary, with all her passionate and prodigious output, produced at best mere faithful representations of natural forms. Amelia Blackburn was an artist. Her works were exquisite in design and composition, as well as in technique. To quote from an article in *The Queen* of 18th November 1911:

> 'They are made of ordinary white kitchen paper. First, the object must have been drawn very carefully, then cut out most accurately. All the details of the object, such as the petals of the flowers, the tiny feathers of the birds' wings no thicker than a hair, the fluffy tufts on their heads, were all cut out separately, each tiny cutting (some so small as to be almost invisible) being fixed in its proper place with gum. Every object is coloured and shaded accurately, according to nature, and pin pricks are used when scissors fail to get the desired effect. At first glance the impression is of a beautiful soft painting and it is only on very close examination that one can see the tiny space that divides one line from another. . . . There are golden pheasants, exquisitely shaded birds of paradise and a particularly beautiful group

Opposite: One of Mrs Delaney's flower mosaics: British Museum

Paper cut by Amelia Blackburn: British Museum

of humming birds perched on green boughs. Every line in the plumage of the birds is cut out separately as are the blades of grass and the leaves on the trees. . . . The wreaths of flowers deserve a short description. They are only from about four to six inches in diameter and represent a wreath consisting of roses, forget-me-nots, daisies, pansies, lilies of the valley, and tiny green leaves. The heads of some of the flowers are not much bigger than a pin's head, yet they are perfectly formed and coloured, and have their respective parts accurately put together.'

So popular were Miss Blackburn's creations among the society of her day that they were known affectionately as 'Amelias', a name which came to be used for all paper-cut work for many years afterwards.

Included in the album of Amelia Blackburn's cut paper designs at the British Museum is some anonymous eighteenth-century work of a fineness of detail so fantastic and microscopic as to

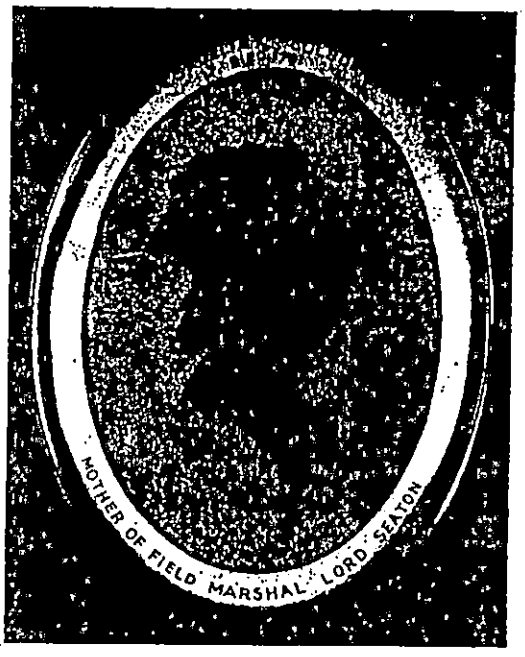
defy any attempt to envisage how it was done. Among larger designs in a treatment resembling modern wood-cutting, each stroke of modelling being faithfully perforated in the paper, are the Lord's Prayer cut in a fine script on a medallion no bigger than a halfpenny and a silhouette of a galleon smaller than a farthing, complete with sails, sheets and flags, surrounded by a gossamer-like border design as thin as so many hairs. Also a number of doily-like objects, enormously detailed and no bigger than half-crowns.

There are, too, decorative vases of flowers, every petal, leaf and stem carefully carved out of paper and the vase traced in a spider's web of delicacy.

The activities of Mrs Delaney, Amelia Blackburn and others of their school undoubtedly set the stage for the fashion in elaborately hand-cut, and later machine-made, Victorian valentines, doilies and other intricate lace paper-work of the mid-nineteenth century onwards. Of these only the doily still survives in coarsened and debased form. These are still used, sometimes with success, as decorative elements in modern paper sculpture. Whilst writing this book, however, I have seen my first plastic doily— a ¼-inch thick creation in an unmistakable pea-green—and am compelled to deduce that the last descendant of the once beautiful 'Amelia' has finally had its day.

The history of the lace paper valentine is remarkable enough to occupy the major portion of a substantial book on the subject by Ruth Webb Lee of the U.S.A. The first dated lace paper valentine was posted on 13th February 1826 and was embossed by hand. In the 1840's and 1850's valentines of astonishing elaboration were produced, carrying several layers of lace and

A typical silhouette portrait in a traditional ebony frame: late eighteenth century
Right: pinprick picture *c.* 1830: Victoria and Albert Museum. *Crown copyright*



sometimes fascinating devices called 'cobwebs' or 'beehives', which, when pulled by a silk thread, would rise from the surface of the valentine like a delicate paper cage, through the bars of which could be read some sentiment, picture or verse beneath. In the 1850's mechanical valentines were invented upon which humorous figures could be made to roll their eyes, push a pram or wash-up vigorously to the accompaniment of a lugubrious verse, by pulling a paper lever at the side of the valentine.

The Victorian imagination seems constantly to have been captured by the possibilities of paper as a constructional and educational amusement, and countless books of instruction were produced with elaborate colour-lithographed diagrams, all marked, coded and prepared ready for the scissors of the succeeding crops of young hopefuls in the newly erected nurseries and play rooms of the supertopian stucco-fronted terraces in Belgravia and South Kensington.

Of an evening the families would gather round the Pollock paper theatres in the parlour to see the latest play (twopence coloured for Bayswater, penny plain for the new houses on Bulinga Marshes), whilst Nanny, Mamma and Sis folded paper caps, boats, darts and flowers for the instruction and improvement of the rising generation. Demure young ladies, otherwise elegantly

unemployed, turned out Papyro Plastics by the ton for the enrichment of the neighbourhood's parlours, or pricked out portraits of Papa, Mamma and all their uncles and aunts till they pricked their fingers and fell into a swoon. At Christmas-time ceilings groaned to match the tables, above the weight of their dependent fantastic paper swags and garlands.

And every Sunday evening the paper discs of Papa's Ariston hurdy-gurdy wheezed solemn hymns for the stimulation of the family's piety and devotion.'

* * * * *

The black paper silhouette portraits which still hung on the walls of late nineteenth-century England had their origins in a legend that a lover once returned after a short absence to find his betrothed was dead. He burst, distraught, into the death chamber, and saw upon the wall the perfect shadow of her profile cast by a candle beside the bier. Heartbroken, the bereaved lover traced the shadow, to keep in remembrance of his beloved.

The earliest cut paper silhouettes seem to have been made by a Mrs Pybury, who certainly did portraits of William and Mary in 1699. What she called them we do not know, for the celebrated M. Etienne de Silhouette did not appear on the scene until the mid-eighteenth century. M. de Silhouette was *contrôleur générale des finances* under Louis XV and his cheese-paring economic policy, dictated, we are told, by the ruinous war of 1756, caused his name, somewhat derisively, to be associated with cheapness. Paper-cut portraits were a hobby of his and as this form of art was comparatively inexpensive they began to be known jokingly as silhouettes and the name stuck.

The heyday of the silhouette lasted from the middle of the eighteenth to the first quarter of the nineteenth century when it began to fall into disrepute, being adopted as a catchpenny by cheapjacks at fairground booths. One had a stand in the Thames Tunnel, others cried their wares on the Chain Pier at Brighton and the trade eventually received its *coup de grâce* with the advent of the tin-type photographers a decade or two later.

Embossed paper-cut by Jane Elizabeth Cook (1845-1920) to illustrate The Ingoldsby Legends: Victoria & Albert Museum. *Crown copyright*

Opposite:
Left, lace paper valentine, mid-nineteenth century
Right, mechanical valentine of the same period: British Museum

Poland

Though its history is very short a legend has already grown up that modern paper sculpture was born in Poland, and is a development of the folk-art paper-cut tradition in that country. Paper-cuts are of course known all over the world, in some countries dating back for many centuries, but in Poland they seem to be particularly vigorous and varied even though they appear to have originated as recently as the seventies of the last century.

Yet it would be an oversimplification to conclude that this highly skilled art developed to such perfection in so short a period. Its origins can be traced back to other forms of folk art and primarily to the rich variety of folk tapestry, to mural paintings and embroidery as well as to artistic decoration of furniture, such as wooden chests, very popular in peasant homes. The technique of paper cutting owes a lot to the old technique of leather cutting and designs are based on embroidery and lace. In recent times textile prints and wall paper, too, have left their mark on the paper-cut.

The emergence and development of paper cutting as an art was to a great extent determined by the widespread use of skilfully made scissors, which, my source of information tells me, peasant women learnt to use adroitly while shearing sheep and doing their home sewing! Scissors as a household tool were already known in Europe in the Iron Age, about 1000 years B.C. and they have been in use on Polish territory since the second century. They were, of course, hand made and contained a spring which made them easy to handle. These old-type scissors are still very popular in the villages, where people have them made by the local smith, and are the favourite tool of the paper-cutters.

Thus Polish peasant women, who—like women of every other country—want their homes to

Appliqué paper-cut picture from Lowicz, central Poland

Interior of a Kurpie cottage, north-east Poland: *photographs:* Polish Cultural Institute

look beautiful, find that paper-cuts satisfy this desire. Their ultimate forms are a matter of age-long experience and tradition in the other arts as well as a result of observation of nature.

Paper-cuts are made in all parts of Poland, but most active are the East-Central districts of the Vistula and Bug basins. The art is widely practised in the Warsaw district, in the northern parts of the Lodz, Kielce and Lublin and the western part of the Bialostockie areas.

In spite of a great variety of types all Polish paper-cuts can be divided into two main groups. The first is monochromatic and is graphic in composition with the emphasis on rhythmic inter-

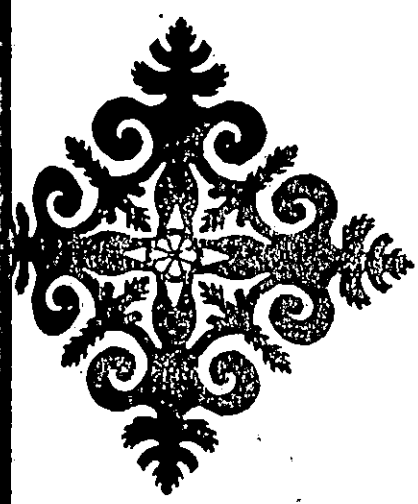
play of lines. The design in such cuts is determined by the technique. It is worked symmetrically around one or more central motifs. In this way the cutter develops geometrical compositions such as squares, stars and rectangles. The second group consists in essence of multicoloured paper cuttings fixed to a common base. Such cuts are really a kind of decorative painting and here the emphasis is on colour. Other kinds of cuts are a mixture of the two styles.

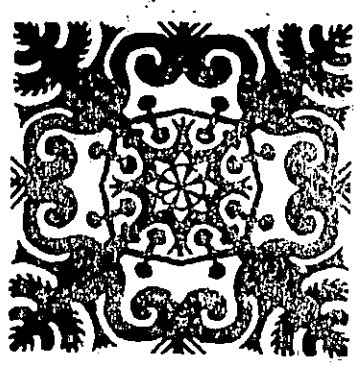
The graphic type of paper-cut is best known among the Mazury group, who inhabit the right bank in the central basin of the Bug and Vistula rivers. These people, called Kurpies, are a regional group who have developed the art of paper cutting to a very high level indeed. Every child in these villages helps its mother to cut paper ornaments for the home, acquiring skill in reproduction of traditional design in the process. Twice yearly, during spring cleaning and house painting, new paper-cuts are made for the freshly painted walls. Whole villages, and sometimes individual artists, vie with each other.

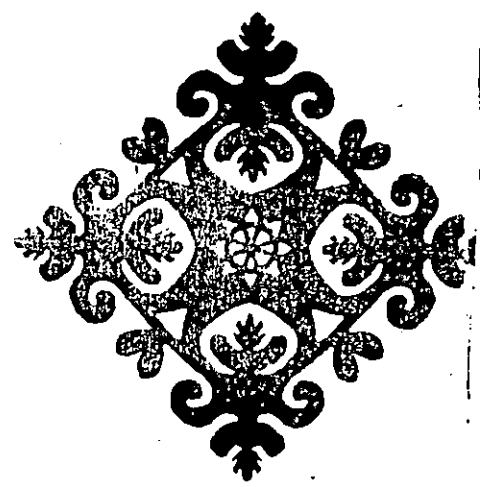
Paper-cuts most frequently encountered are *leluje* (trees), also called 'herbs' or 'greenery'. The main motif in such cuts is a kind of decorative circle or oval fringed with petals growing from a highly stylised stem, intertwined with all sorts of branches and leaves. In the more elaborate cuts we see also silhouettes of birds or figures sitting on the branches of the main stem. Another motif is the 'cup model', the cup resembling a triangle at the base. The design of the cuts is a network of minute geometrical figures with an animal or human form in the centre. Some cuts look like trees growing out of pots, some like primitively drawn human figures. The same motif can be executed either with great wealth of complicated detail, or with a directness and simplicity which makes it look as if cut in metal. These are known as 'one axis' cuts, symmetry of design being achieved by folding the paper in two before cutting.

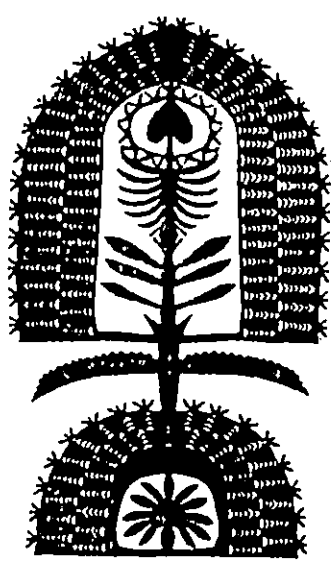
Another characteristic cut of the Kurpie district is the 'star' or 'circular' cut. In this cut the ornament is contained in a radius and a repetitive effect is achieved by cutting paper folded over a couple of times. Among cuts of this type are real jewels of delicate lace design.

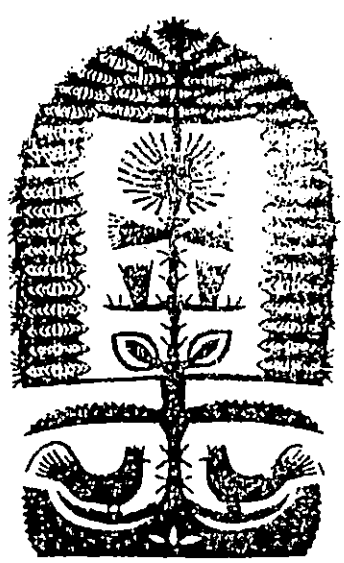
A third kind are cuts utilizing birds, and in particular cocks and peacocks, as the main theme.

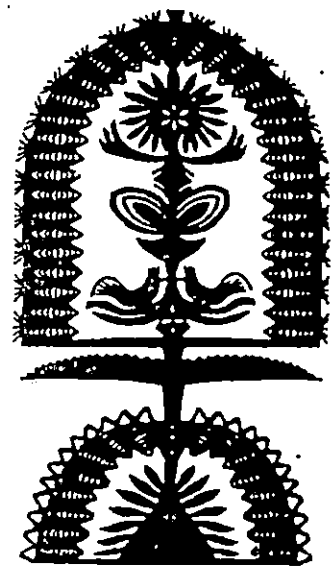












Paper cuts from Sieradz, central Poland, and *opposite*, Kurpie paper-cuts. *Photographs:* Polish Cultural Institute

The birds are quite large and are cut out of monochromatic paper and then adorned with little stripes or circles of different colours to mark combs or plumage. The tails of peacocks for example are quite dazzling in colour and decorative quality. Such birds are put up on walls, always in pairs, just over the door. It should be mentioned here that the cock is the most beloved motif of the Polish paper-cut.

Paper-cuts of the Lublin district (south-east of Warsaw) are similar to the circular Kurpie cuts. Their radii contain geometrical and animal figures and are composed of two different entities, one forming the centre and the other the fringe. The centre is usually quite small and the emphasis is on the fringe, which is rich in fantasy and ingenuity of design.

In the Warsaw district, south-east of the capital, we meet a kind of paper-cut resembling a square or an octagon, which is made by using a mixed technique. The octagon is produced by cutting a square of paper which has been folded along its diagonals and then again along the perpendiculars. The cut, which is like a delicate lace, is then fixed to a sheet of paper of contrasting colour. The general effect of such a cut depends not only on the design but also on the mixture of colours.

The Lowicz cuts (from the left bank of the Vistula) differ from the Warsaw cuts in technique. The main elements, the circle and fringe, are cut out separately from different sheets and joined by paste, made of rye flour, the joined pieces then being stuck on a background of yet another colour. Such a technique gives the artist an opportunity of using many colours and also allows him to develop a more complicated composition.

The oldest form of coloured paper-cut is the picture cut. This is composed of a number of elongated pictures, representing scenes from village life, such as weddings, harvesting, spinning of flax, and interiors of homes. But whatever the theme, the paper-cuts remain faithful to their nature as wall decorations, however realistically the themes are presented, although frequently

the technique is very naïve and simplified. Characters reproduced in the cuts are always portrayed in their regional costumes.

A type of cut in which the subject is of secondary importance is the purely decorative square or rectangle, in which there is a tree or flower growing out of a pot and surrounded by little cocks, peacocks or paradise birds. In such cuts the artist follows his fancy in the choice of shapes or colours, without particular regard to nature. Such cuts are symmetrically composed and the design is balanced around the main axis. Another similar kind of cut represents bouquets, mounted on white round sheets of paper.

A curious kind of paper-cut produced in the Lowicz district is in the form of long ribbons (always two identical ones) joined together and hung vertically on the wall. The ribbons are fringed at the ends and are adorned with stylized flowers.

In the neighbourhood of Lowicz there is another type of paper-cut, quite different from those I have described. Here too we get circles, stars, ribbons with bows and squares, but both composition and colours are very different from the Lowicz cut. The square cut in monochromatic paper is typical here. The main ornamental theme runs along both sides of the diagonals and additional ornaments finish off the composition. The graphic ornament is enriched by birds surrounding the cut like a frieze. Hence these cuts are called 'friezes'.

This district also produces an odd cut called the 'rod'. It can be monochromatic or multicoloured. The cut represents little trees growing out of pots with stems smooth and straight as if made of metal. The multicoloured cuts of this type are done in the following way: the same tree is cut out in many sizes and colours and the smaller are mounted on the bigger ones. Sometimes the cuts of monochromatic paper are adorned with petals of coloured paper fixed on the tree where the design is broad enough to accommodate it.

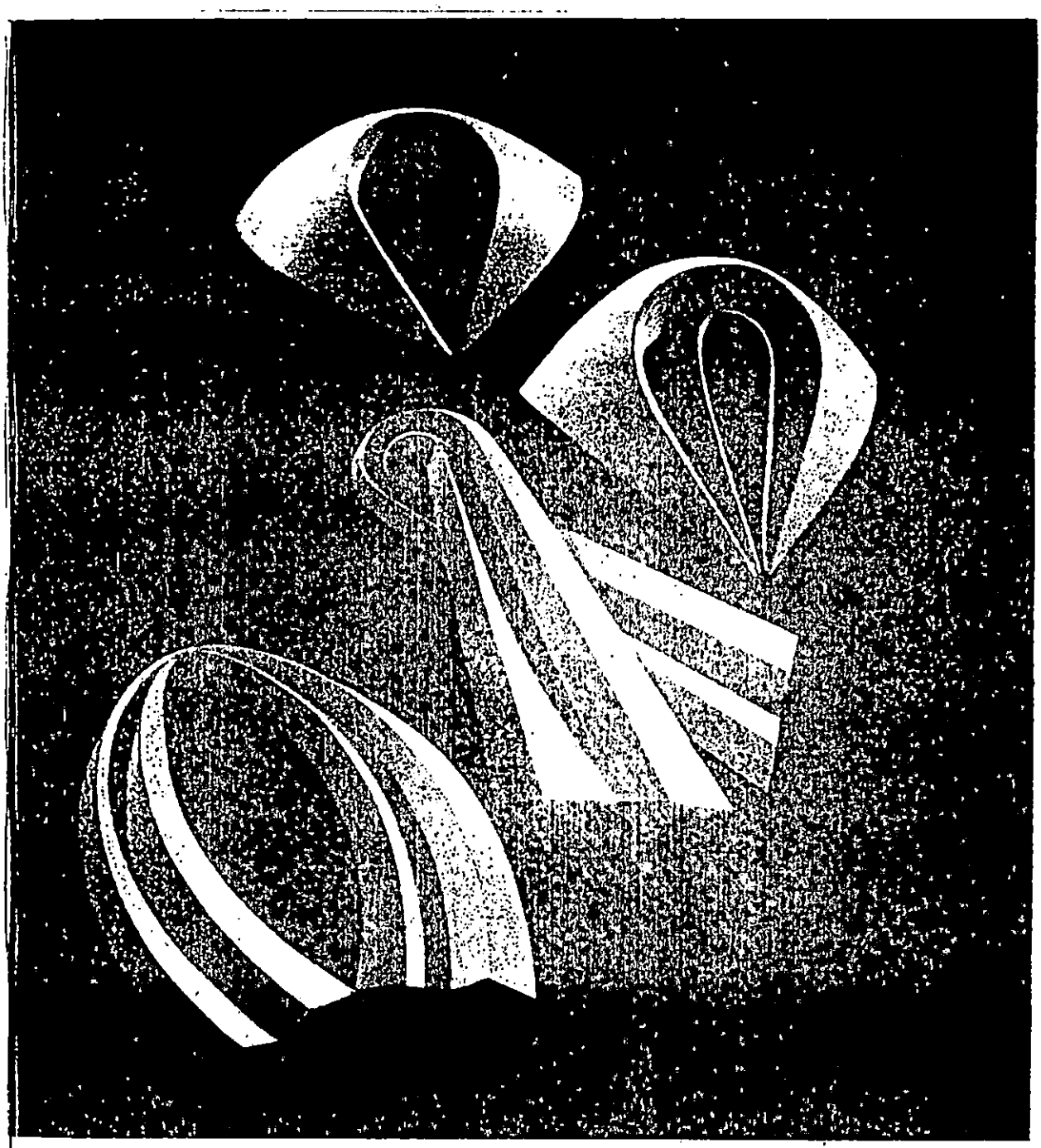
Most paper cutters in Poland are women, although there are men who take to it. Some cutters are real artists who often set up schools of their own. Their work and taste are imitated by others, especially by the young. As a rule paper cutting is done direct without any drawings though the younger generation, under school influence, do occasionally help themselves by planning their designs before cutting.

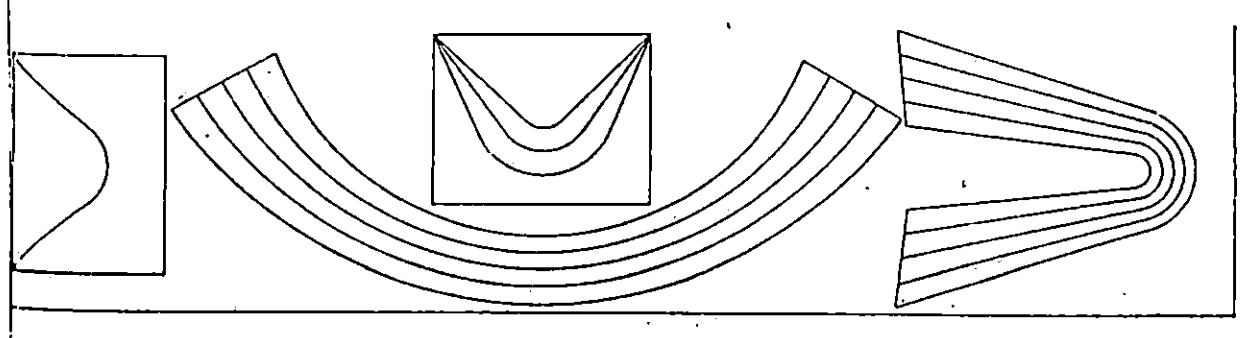
It is reasonable to deduce that all this vigorous interest in paper cutting throughout the length and breadth of Poland led to the development of more complex three-dimensional forms and the eventual birth of modern paper sculpture. Sadler remarks that the Academy of Art in Warsaw sponsored the construction of large decorative panels—human figures, pseudo-architecture and bas-reliefs—all in paper, and that these examples stimulated industrial artists to explore the medium for commercial purposes.

Between the World Wars the paper-sculpture work of Polish artists was in evidence in continental exhibitions, where it began to influence the work of English and American artists.

Many brilliant Polish artists emigrated to England and America, taking their talent with them. Pioneer names such as Marya Werten, Erica Hanka Gorecka and Tadeusz Lipski come immediately to mind, setting, as is so often the case among the Arts, a standard right from the outset which has not yet been surpassed.

Opposite: Fundamental forms: curved scores





BAHAN BACAAN

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I. PENGETAHUAN BAHAN DAN ALAT

1. BAHAN

1.1. Sejarah singkat kertas

Kertas sebagai salah satu bahan telah dipergunakan manusia dalam berbagai kegiatan sesuai dengan sifatnya, baik sebagai bahan untuk menulis, mencetak buku - buku dan keperluan hidup lainnya juga dipergunakan sebagai alat untuk menciptakan bentuk karye seni yang ekspresif. Hal ini telah terbukti dengan adanya hasil karya seni dari Cina, Jepang Mexico dan Polandia.

Sebagai bahan kebutuhan hidup manusia kertas ditemukan pada tahun 200 SM dinegeri Cina. Walaupun penemuan pertama adalah Cina akan tetapi kertas belum dimanfaatkan secara baik. Dalam hal pemanfaatkan kertas ini terkenal kouletan Jepang sehingga Jepang di katakan sebagai negara" Paper Country " Jepang telah memanfaatkan kertas untuk berbagai keperluan sehingga dapat menunjang pertumbuhan dan perkembangan ekonomi Jepang sendiri. Boneka Bonek Jepang terkenal yang dikerjakan dalam industri rumah yang dikerjakan dengan apa yang disebut pekerjaantangan itu terkenal kesemua penjuru dunia , sehingga hasilnya menjadi barang souvenir dari negeri sakura tersebut. Disamping itu juga terkenal Origami atau kerajinan lipat melipat kertas.

Dari negeri Cina kemudian pengetahuan kertas itu oleh bangsa Arab pada waktu penaklukan negeri negeri timur dan kemudian diperkenalkan ke Eropah pada 1000 tahun sesudah di temukannya kertas tersebut.

Sebelun ditemukannya mesin dan alat pembuat kertas maka pengerjakan kertas dilakukan dengan tangan manusia. Kertas yang pertama di Eropah terbuat dari kain kain paco paco yang diolah dalam bentuk bubur , kemudian dijadikan kertas setelah melalui berbagai prosess. Kalau di Eropah bahan utama pembuatan kertas adalah paco-paco maka di negeri Timur bahan pembuatan kertas adalah bambu, jerami , yute , daun jagung yang juga diolah menjadi bubur kemudian dengan berbagai proses akhirnya menjadi kertas.

Pengolahan kertas itu kemudian berkembang pada zaman renai ssance sehingga ditemukan berbagai jenis kertas yang baik. Oleh karena adanya kertas yang baik tersebut maka beberapa seniman memakainya untuk media seni seperti Botticelli, Rapael dan juga para pembesa r pada zaman ter½ sebut. Disamping bahan bahan tersebut diatas berkat penyelidikan seorang Perancis yang bernama Remer di temukan pula kemungkinan kayu sebagai bahan pembuatan kertas. Pembuat itu terjadi pada tahun 1918.

Pada tahun 1879 ditemukan pula mesin pengolah bahan pembu- tan kertas, sehingga pengolahan malalui tangan dapat digantikan dan tentu saja produksi kertas semakin meningkat.

Setelah penemuan mesin tersebut maka pembuatan kertas semakin pesat dan berbagai macam kertaspun di temukan. Mulai dari kertas yang bertekstur halus dan licin sampai kepada yang bertekstur kasar. Pembuatan kertas dalam berbagai jenis tersebut juga bergantung kepada kebutuhannya. Mulai dari kertas yang lunak sampai kepada kertas yang keras dan kaku, dari yang transparan sampai kepada yang opaque.

(sTp)

Disamping itu agar lebih menarik lagi maka kertaspun kemudian diberi bermacam-macam warna dan malah diberi bermacam macam ornamentik sehingga kertaspun kadangkala dapat berfungsi hias karena adanya motif motif yang menarik.

Berdasarkan kepada kegunaanya maka kertas juga di buat dalam berbagai ukuran (kertas gambar dari A0 = 841 x 1189 mm sampai A 10 = 26 x 37 mm).

1.2.Teknologi Kertas

Setelah ditemukan mesin pengolahan kertas pada tahu tahun 1879 mulailah pengolahan kertas secara mekanis dan dengan a danya mesin tersebut berbagai kemungkinan baik bentuk. warna , tekstur dan ukuran kertas dapat di ciptakan.manusia.

Bahan utama pembuatan kertas yaitu cellulosa yang terdapat dalam berbagai bahan seperti kayu oemara mengandung 50 % kapas mengandung 85 - 90 % oellulosa dan ini sangat besar sekali manfaatnya untuk bahan kertas namun kerna harganya mahal maka kapas tidak dijadikan bahan dasar kertas.

Selain dari bahan kayu dan kapas juga dapat diambil bambu, jerami, pohon murbei, amplas tebu, runput , kertas sisa dan kain bekas. Tentu bahan ini tidak terbatas kepada bahan yang sudah disebutkan diatas karena berbagai penyelidikanpun tetap dilakukan untuk memperoleh bahan baku kertas yang lain sejalan dengan perkembangan ilmu dan teknologi.

1.2.1. Proses Pembuatan Kertas

Kertas tersebut dari bahan utamanya yaitu cellulosa untuk memperoleh cellulosa itu haruslah bahan baku kertas seperti jerami, kayu.....

kayu dan sebagainya itu dijadikan bubur dengan melalui proses mekanis. Bubur semacam itu disebut " pulp "
Bubur itu tadi kemudian dicampur dengan berbagai bahan sehingga menghasilkan kertas. Kalau urutan pengerjaan kertas secara singkat adalah sebagai berikut :

Sebagai contoh bahan bakunya Jerami

1.2.1.1. Pekerjaan Pendahuluan

Pekerjaan pendahuluan yaitu persiapan untuk pengolahan lebih lanjut. Pekerjaan pendahuluan itu terdiri dari :

a. Merang batang padi dipisahkan dari padinya, kemudian merang yang bersih dan kering diambil agar kertas yang diperoleh lebih baik.

Kemudian merang tadi dipotong kecil kecil dengan ukuran sekitar 5 sampai 10 cm.

Untuk pembantu proses pemasakan agar bahan tadi menjadi pulp dimasukkan Soda Api atau Kostik Soda (ka OH) atau KOH (Potasch Caustic) atau $Ca(HO)_2$ (kapur kembang)

1.2.1.2. Pemasakan

Bahan dasar kertas(jerami yang telah dipersiapkan itu dimasak dengan sebuah ketel pemasak yang dalam (curam) dengan tinggi ketel 2x ukuran diameter alas ketel. Kemudian dipansakan secara langsung . Dalam proses pemasakkan itu bahan yang dibutuhkan adalah dengan perbandingan :

Jerami	100
Kostik Soda	10 - 12
Air	1.000.

Pemanasan dilakukan selama kira kira 2-3 jam dengan suhu kira-kira 100 C dan juga dari pengala-

Pemanasan dilakukan selama kira-kira 2-3- jam dengan suhu kira-kira 100 C dan juga dari pengalaman yang telah dilakukan sebelumnya.

Perbandingan campuran antara jerami , kostik soda dan air dapat dirobah dan ini berapa besar perbandinganya akan mempengaruhi hasil yang diperoleh.

1.2.1.3.Pencucian

Pencucian dimaksudkan adalah untuk membuang air jerami, Pencucian dilakukan dalam sebuah bak yang mempunyai pipa pembuang sehingga air dapat diganti dan dibuang sekali gus. Pipa pembuang tadi diperlengkapi dengan saringan dan kran.

Jerami yang sudah dimasak dimasukkan kedalam bak pencician dan serat seratnya lalu diuraikan, kemudian diperas dan setelah itu dicuci kembali dan pekerjaan itu dilakukan sampai 3 kali atau lebih.

Untuk mendapatkan kertas yang putih maka jerami tadi diputihkan dengan memakai bahan kaporit dengan kepekatan 10 % dan setelah itu baru dicuci bersih.

1.2.1.4.Penggilingan

Setelah jerami tadi selesai dicuci maka pekerjaan selanjutnya adalah penghancuran hingga menjadi bubur dapat dilakukan dengan berbagai cara seperti:

- Ditumbuk dalam lesung sambil ditambah air sedikit
- Digiling dengan batu penggiling misalnya dalam batu penggiling untuk membuat tahu,dengan penambahan kadar air.
- Digiling dengan alat yang lebih modren yang disebut Hollander. Bentuk Hollander itu menyerupai bak bulat panjang.

Dalam bak ini terdapat satu atau dua pisau dalam roda-roda . Pisau sejajar dengan sumbu roda. Cara kerja pisau ini seperti gunting dan naik turunnya dapat disetel.

Jika pisau dan roda diturunkan maka lobang antara pisau dan roda akan menjadi sempit dan bila roda bergerak maka jerami yang dimasukkan akan diuraikan menjadi pecahan kecil kecil.

Besar/kasar atau halusnya serta jerami yang diuraikan bergantung pula kepada jenis kertas yang akan dihasilkan. setelah itu jerami yang sudah hancur tersebut disaring dengan sebuah saringan dengan besar lobang antara 2 - 2½ mm . Serat yang masih kasar akan tertinggal pada saringan sedangkan yang halus akan turun bubur jerami yang mengandung serta halus, disaring lagi dengan saringan halus kemudian diperas dan serat-serat yang sudah kering dikumpulkan kedalam sebuah bak.

2.1.5. Pembentukan Kertas

Pembentukan adalah proses merobah bubur kertas men menjadi lembaran lembaran kertas. Untuk memeroleh ketebalan kertas yang sama hendaklah diambil ukuran besa r serta jerami yang sama .

Bahan bahan dan alat yang harus disediakan :

- Saringan halus yang terbuat dari kawat kasa.Konstruksi saringan dubuat sedemikian rupa sehingga mudah dibuka dan dipasang dengan ketinggian pinggir yang dapat disetel.
- Perekat untuk menutup pori pori serta untuk merekatkan serat serat yang pendek agar menjadi kuat.

Perekat dibuat dengan kadar 1 -3 % tepung kanji dan dicampur dengan 5 % tawas. Perekat yang terbuat dari kedua bahan ini mempunyai daya tahan dan daya rekat yang baik.

- Sebuah bak yang panjang dan lebarnya lebih sedikit dari panjang dan lebar saringan
- Bahan pengisi gunanya untuk mengisi pori-pori selasela agar tidak tembes cahaya (opaque).

Sehungga kertas akan menjadi halus rata dan baik. Bahan pengisi terdiri dari bahan kaolin (tanah liat putih atau gips) Kadar bahan pengisi berkisar antara 5 % dan 20 % . Bila kadarnya lebih dari itu akan menyebabkan kertas tersebut tidak kuat.

- Za t warna gunanya untuk memberi warna kepada kertas Zat warna yang biasa dipakai adalah zat warna anilin
- Sebuah bak penapung perekat yang mengalir dari saringan.

Proses terjadinya kertas.

- Air perekat, bahan pengisi dan zat warna (kalau perlu) di masukkan kedalam bak sampai 2/3 bagian
- Gumpalan serat serat dimasukkan kedalam saringan dengan takaran tertentu . Serat yang dimasukkan tadi diratakan permukaanya.
- Dengan memegang pinggiran saringan maka saringan tadi maka dengan hati-hati saringan itu dicelupkan kedalam bak yang berisi larutan perekat,kemudian diangkat dan digoyang goyang agar serta serta yang ada menjadi simpang siur, sehingga diperoleh hasil yang lebih kuat.

- Saringan kemudian diletakkan diatas bak lain yang lebih kecil untuk membiarkan cairan perekat yang ada diatas turun sedangkan serat serta yang telah rekat telah menjadi kertas basah.
- Perekat yang turun ditampung dengan sebuah tempat untuk dipergunakan lagi. Oleh karena cairan itu telah dipakai tentu saja kadar zatnyapun akan menurun dan untuk dipakai lagi hendaklah ditambahkan kembali zat warna, zat tambahan (kaolin) dan perekat agar kadarnya kembali sama .
- Setelah zat perekatnya turun semua kemudian pinggiran saringan dibuka dan kertas basah tadi dipindahkan keatas lembaran kain. Kain diletakkan pada bahagian atas (diatas permukaan kertas basah) kemudian dengan mengambil penekan yang panjang dan lebarnya sama dengan saringan ditekankan kepada kain pelapis kertas tadi dan kemudian dibalikkan . Selanjutnya saringan dilepaskan dari kertas basah tadi dengan hati-hati. Kertas dan kain kain tadi dipindahkan kepada tempat untuk dilakukan pemerasan dengan alat pres. setelah dipres maka perekat dan air yang ada keluar dan ini akan mempercepat proses pengeringan.
- Pengeringan dilakukan dengan pemanasan . Pemanasan dapat beru%a pemanasan dengan cahaya matahari atau dengan mengalirkan hawa panas.

Setelah agak kering kain diambil dengan hati-hati dan kertas akan tinggal pada alas (seng) Untuk mempercepat pengeringan dapat dilakukan dengan sistim counter yaitu meletakkan kertas pada daerah yang panasnya tinggi dan yang agak kering pada daerah yang panasnya agak kurang.

- Setelah kering benar baru kertas tadi diangkat.

1.2.1.6. Finishing

Kertas yang selesai dijemur itu mempunyai dua permukaan yang berbeda teksturnya. Bagian yang diatas (yang tidak menempel pada alas) mempunyai permukaan yang agak kasat sedangkan yang menempel pada alas lebih licin.

Untuk memberikan tekstur yang lebih harus dapat dilakukan berbagai cara :

- Digiling dengan silinder dari bahan yang mempunyai permukaan yang halus seperti kaca, besi dll.
- Digilas dengan dua selinder yang licin. Kertas berada diantara kedua selinder tadi, dengan jepitan yang dapat diatur kedua selinder itu diputar dan kertas akan tertekan sehingga permukaan kertas akan menjadi lebih halus , rata dan lebih padat.

Setelah selesai penghalusan tekstur , lalun pingkertas dipotong menurut ukuran tertentu

Dengan selesainya proses pemeotongan maka selesailah proses pembentukan kertas.

1.3. Musuh kertas

Kerusakan kertas ppada dasarnya disebabkan oleh dua faktor yaitu yang datang dari luar dana yang berasal dari kertas itu sendir. Bahan bahan yang di jadikan bahan baku bagi pembuatan kertas Materi yang dipergunakan sebagai bahan pembuatan kertas maupun alat alatnya menimbulkan aspek pengawetan dan penghancuran terhadap kertas tersebut. Air yang dipergunakan tidak bersih demikian juga bahan lain seperti kanji , cuka , garam mineral dll. yang menimbulkan masalah tersendiri terhadap daya tahan kertas.

(sTp)

Mesin sendiripun dapat menimbulkan zat bagi [illegible] kertas, yang merupakan katalisator bagi zat asam belerang yang ada dalam udara. Bahkan kanji itu sendiri merupakan makan yang menarik bagi serangga dan tempat yang subur bagi pertumbuhan bakteri.

Pasta atau lem yang dipergunakan dalam pembuatan buku merupakan peranan yang meragukan dalam daya tahan kertas dan kulit. Pasta biasanya dibuat dari tepung gandum atau tepung beras. Untuk penggganti pasta itu kini telah dibuat alat-alat perekat sintetis terutama polyvenacele. Berdasarkan kepada material yang dipergunakan maka sekaligus juga sudah diperhitungkan musuh-musuh kertas yang mungkin akan menyerang.

Disamping itu kertas juga dapat rusak karena kelembaban udara yang tidak terkontrol, sinar matahari , debu dan kotoran udara lainnya. Sebagai akibat kelembaban udara akan memberi akibat seperti tumbuhnya jamur, bakteri hilangnya lem yang kita pergunakan sebagai pembuatan buku, melemahkan kertas dan kulit. Kegiatan jamur bukan main main cepat pertumbuhannya karena jamur pada pokoknya hidup dari perekat yang ada pada kertas kertas

Selain kelembaban udara juga udara yang terlampau kering dapat juga merusak kertas. Disamping itu sinar mata hari langsung dapat memperoepat perusakan kertas terutama sinar ultra violet. sinar ultra violet akan mengancam struktur molekul kertas. karna keringnya udara maka debu menjadi musuh kertas pula , baik debu yang berterbangan dikarenakan asap, kain , maupun debu yang dibawa angin. Disamping debu juga gas dapat merusak kertas,

 karena .....

Karena gas baik yang berdiri sendiri maupun yang ada hubungannya dengan kertas dapat menimbulkan reaksi kimia yang dapat merusak. Hal ini terdiri karena sulphur dioxida dan adanya zat besi yang terkandung dalam kertas akan menjadi zulphur acid dengan segalaakibatnya yakni berkarat.

Dari sekian banyak musuh kertas maka, rayap merupakan musuh kertas yang sulit dibasmi namun usaha usaha lain dapat juga dilakukan.

1.4. Pengawetan Kertas

Dalam hal menjaga kertas dari serangan musuh musuh kertas yang utama adalah menjaga atau memelihara buku / kertas dengan baik dengan kontrol yang sering.

Namun demikian usaha yang dapat dilakukan untuk menjaga kerusakan kertas dapat ditempuh sebagai berikut:

1.4.1. Bila kerusakan disebabkan kelmbaban udara maka pencegahannya adalah mengembalikan kelembaban sedemikian rupa sehingga jamur tidak dapat menyerang. Mengatur suhu ini dapat dengan mempergunakan listrik, membuat panas buatan, Bila ruangan relatif kecil seperti almari ruangan belajar dapat dipergunakan bahan anhydrous calcium C untuk menyerap air dengan menempatkannya dalam sebuah mangkok.

1.4.2 Bila kerusakan disebabkan oleh cahaya matahari maka usaha yang dapat adilakukan yaitu menghindarkan dari sengatan cahayamataharilangsung terutama sinar ultra violet. Disamping itu dapat juga mempergunakan saringan dengan kaca hijau atau kuning.

Warna ini akan menghalangi sinar sinar yang merusak kertas.

4.3. Bila kerusakan disebabkan debu maka usaha menanggulangainya adalah dengan menggunakan saringan electro static. Untuk pembersihkan udara.

4.4. Bila kerusakan disebabkan rayap, maka usaha yang baik dilakukan adalah dengan mengusahakan agar lemari tidak terbuat dari bahan kayu atau menghindarkan kayu secara langsung bersentuhan dengan tanah.

4.5. Untuk menghindari serangan rayap yang masuk kedalam ruangan dapat dilakukan penyemprotan dengan racun serangga seperti D.D.T, Diedrin, Pryehrum, Gamabenzene dll. Racun ini disemprotkan kedinding , lantai alat-alat yang terbuat daru kayu . Sekali-kali jangan mengenai kertas sebab racun ini juga akan menyebabkan kerusakan kertas.

Sebagai mana halnya penyakit tentu usaha yang paling baik adalah pencegahan dari pada pengobatan.

4.5. Macam Macam Kertas

- Kertas koran

  nama lain : kranton papier

  ciri-ciriny a: warnanya pirang,(putih kecoklatan)
  -Permukaanya agak kasar dan mudah menyerap air
  -mudah koyak

- Kertas duplikator

  ciri ciriny a:-Lebih tebal dari kertas koran
  -warnanya putih dan mudah menyerap air atau minyak

ukuran..

- ukurannya folio = 33 x 21½ cm
  kuarto = 29 x 21½ cm

- kertas tik

  ciri cirinya:- tipis dan transparan
  - warnanya putih atau hijau muda, biru muda dan merah muda

  nama lain; kertas doorslag

- Kertas gambar

  ciri cirinya:- Lebih tebal
  - warnanya putih
  - Kaku dan padat
  -daya resapanair lebih baik dibanding kertas H.V.S

Ukurannya :

Ao	841	x	1189 mm
A1	594	x	841 mm
A2	420	x	594 mm
A3	297	x	420 mm
A4	210	x	297 mm
A5	148	x	210 mm
A6	105	x	148 mm
A7	74	x	105 mm
A8	52	x	74 mm
A9	37	x	52 mm
A10	26	x	37 mm

- Kertas H.V.S

  ciri cirinya: -Lebih tebal dari kertas doorslag
  -Permukaannya sebelah licin dan halus sebelah lagi sedikit kasar

- Kertas briefkaart .....

(sTp)

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  kuarto = 29 x 21½ cm

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  ciri cirinya:- tipis dan transparan
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  -Permukaannya sebelah licin dan halus sebelah lagi sedikit kasar

- Kertas briefkaart .....

(sTp)

- Kertas briefkaart

  ciri ciriнya: -Lebih tebal dari kertas H.V.S
  -Kaku dan padat
  -Warnanya putih bersih dan licin
  -Daya resap air rendah

- Kertas Gloria

  ciri ciriнya: -Salah satu permukaannya dilapisi oleh glanzen paper
  -Kaku dan padat
  -tidak digambari dengan potlot
  -Daya resap airnya tidak ada sama sekali bila diberi tinta, maka tinta tidak akan meresap akan tetapi membeku.
  -Warnanya macam macam selain putih ada juga warna warna muda(merah muda hijau muda, kuning muda dll)

- Karton manila

  ciri ciriнya: -Lebih tebal dari kertas H.V.S
  -Kedua permukaanya agak halus
  -Kaku dan padat
  -Dijual dalam berbagai warna

- Karton biasa

  ciri ciriнya: -Permukaannya kasar
  -Warna cooklat kekuningan
  -Daya resap air lebih tinggi

- Kertas Duplex

  ciri ciriнya: -Lebih tebal dari karton manila
  -Kedua permukaannya halus
  -Warnanya sebelah putih dan sebelah lagi kelabu

- Kertas metalik

Ciri ciriny a : - Warnanya mengkilat seperti logam karena salah satu permukaan itu dilapisi dengan sejenis logam yang sangat tipis
- Warnanya macam macam seperti merah, hijau, biru, perak, kuning tua, violet.

- Kertas Kaca

Nama lain : Kertas cellovan

Ciri ciri : - Tipis da n kenyal
- Permukaannya licin
- Bening dan tembus cahaya
- Warnanya bermacam macam, merah, biru kuning, hijau, biru.

- Kertas Krep

Ciri ciriny a :- Permukaannya bertekstur kasar dengan arah melintang
- Warna bermacam macam
- Luntur bila terkena air
- Elastis

2. ALAT

Alat yang dibutuhka n dalam kerajinan kertas pada hakekatnya bergantung kepa da jenis pekerjaan yang dilakukan. Misalnya alat untuk membuat relief kertas dengan teknik menggores, memotong, dan melipa t berbed a dengan membuat topeng kertas dengan bahan bubur kertas

Walaupun pada setiap pekerjaan alat ala t yang dibutuhkan berbeda na mun pada pokoknya dapat dikelompokkan atas beberapa macam, sebagai berikut:

2.1 Alat pemotong

2.2 Alat penggores

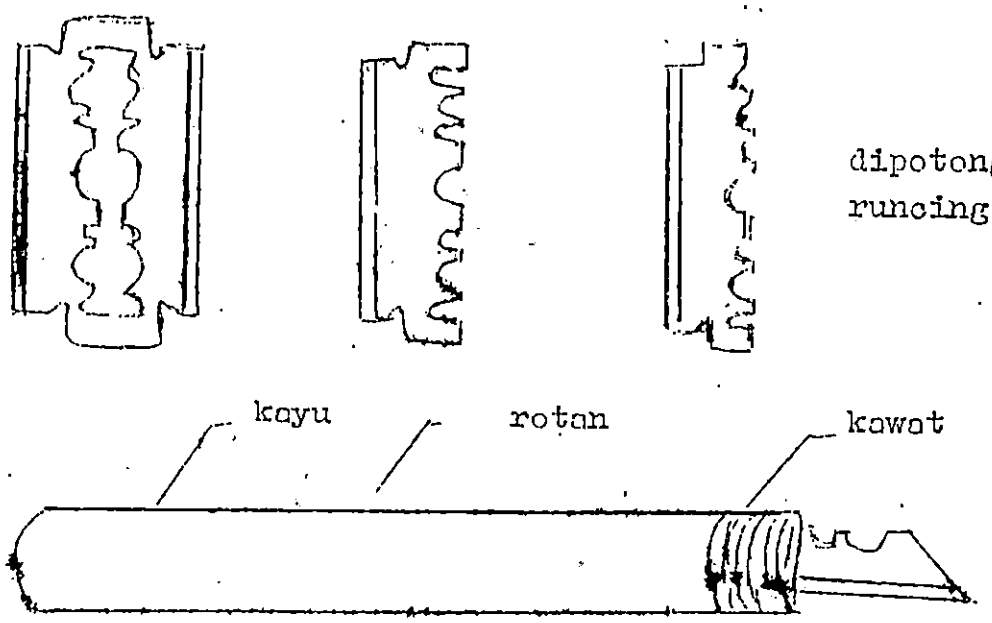
2.3 Alat pembentuk

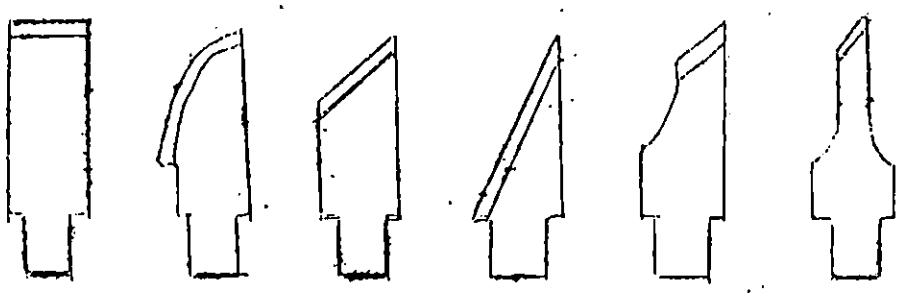
2.4 Alat penyambung

2.5 Alat mewarnai

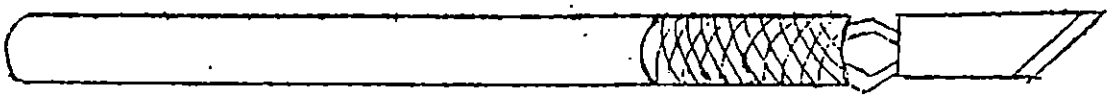
Disa mping alat ala t pokok diatas masih ada alat alat yang lain yang sifatnya sementara dan spesifik.

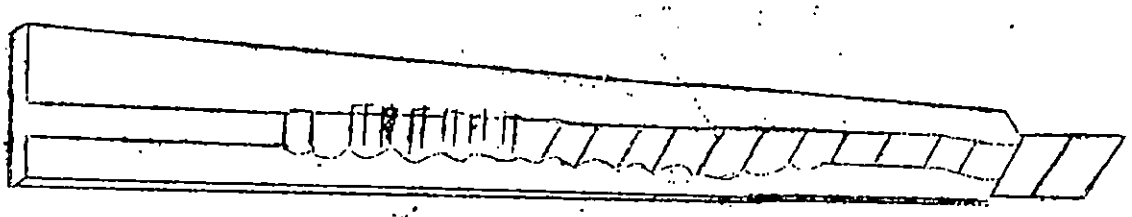
ALAT PEMOTONG





GRIEF HOLT





O L F A

Alat Pemotong serbaguna. GRIEF HOLT

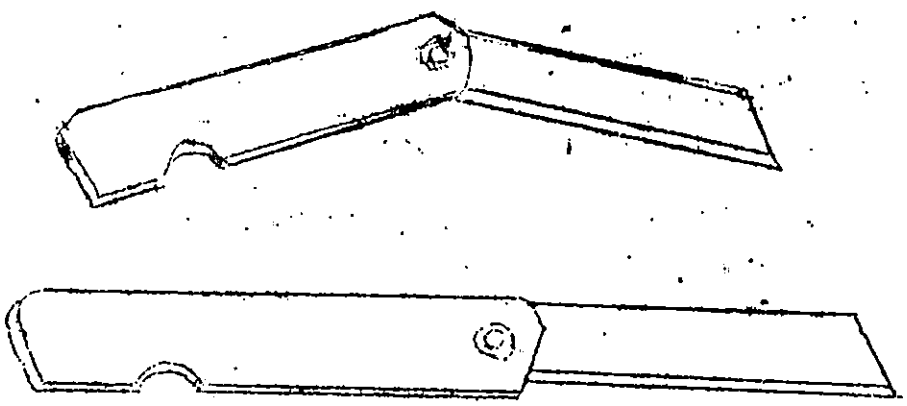
Alat ini terdapat dalam kota yang merupakan set dari pisau itu. Dalam satu set tersebut terdapat 6 buah mata pisau dengan berbagai bentuk. Oleh karena pisau ini serba guna maka bentuk mata pisaunya juga bermacam macam seperti gambar dia tas. Disamping 6 buah mata pisau terdapat sebuah tangkai. Pisau dapat dipasang pada ujung tangkai dengan memutar drat pada bahagian yang kesat dan memasukkan bagian belakang anak pisau dan kemudian dikunci kembali dengan memutar kembali dratnya sehingga menjadi kencang, Pisau ini dapat diasah oleh karena dapat bertahan lama.

ALAT PEMOTONG SERBA GUNAOLFA

Alat ini hanya terdiri dari sebuah tangkai dengan satu set mata pisau dengan bentuk dan ukuran yang sama. Bila mata pisaunya sudah tumpul dapat ditukar dengan mematahkannya dengan pertolongan alat khusus yang terdapat pada pangkal pisau itu (warna kuning). Pisau tumpul itu dipatahkan pada batas garis garis miring yang sudah ada pada mata pisaunya.

Keistemewaan pisau ini dapat ditarik dan dimajukan. Kalau tidak dipakai dapat ditarik matanya kedalam dengan pegangan yang sudah ada dan bila akan dipakai lagi dapat dikeluarkan.

Pisau silet bertangkai



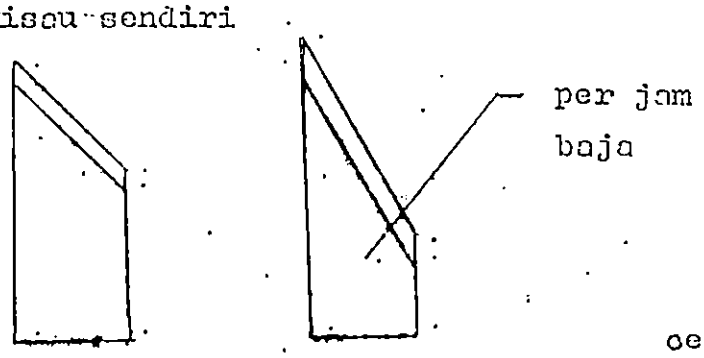
Kebaikan pisau silet ini adalah harganya murah dan dapat dilipat kalau tidak dipakai .

GUNTING

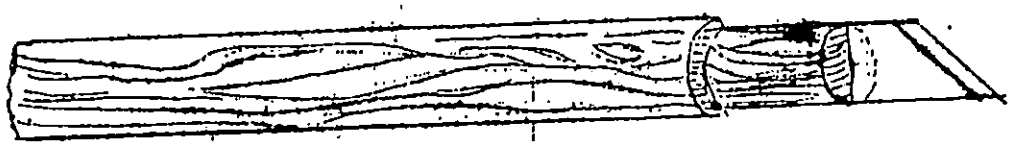
Selain pisau, gunting dapat juga berfungsi sebagai alat pemotong yang baik, baik pemotong garis lurus maupun untuk lingkaran. Besar atau kecilnya ukuran gunting dapat disesuaikan dengan kebutuhan pekerjaan.
Untuk kertas yang tebal dapat dipakai gunting besar dan untuk kertas yang tipis cukup gunting yang kecil.

(sTp)

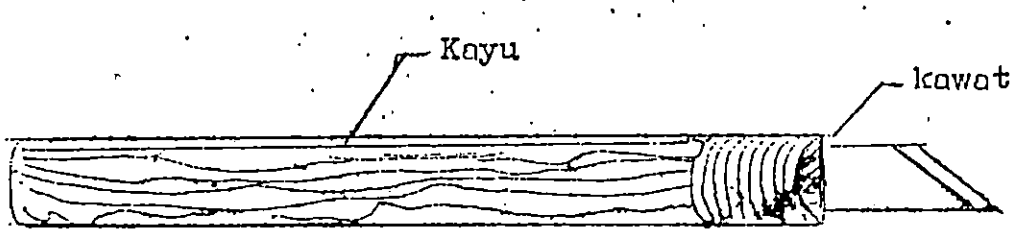
Membuat Pisau sendiri



Gambar 1.



Gambar 2.



Gambar 3.

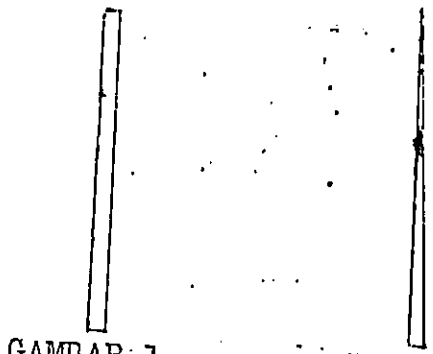
Caranya:

1. Sediakan perjam yang sudah tidak terpakailagi
2. Potong menurut bentuk yang dikehendaki, kemudian bahagian matanya diasah. (gambar 1)
3. Buat tangkainya dari sepotong kayu yang dibentuk sedemikian rupa sehingga enak dipegang. (gambar 2)
4. Pada bahagian ujungnya dibuat lekukan untuk tempat melilitnya kawat penahan mata pisau.
5. Pisau dimasukan kedalam celah yang sudah dibuat pada ujung tangkai sampai kedalam yang tertentu dengan pertimbangan kekuatan mata pisau dan tidak mudah bergerak
6. Pada bahagian lekukan yang sudah ada dililitkan kawat dengan tersusun rapi sehingga memperindah bentuk.

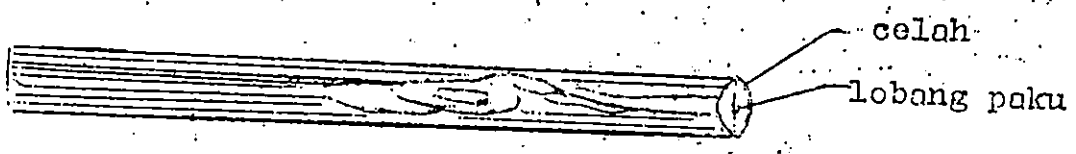
Dengan demikian selesailah sebuah pisau penoreh dan pemotong. (gambar 3).

(sTp)

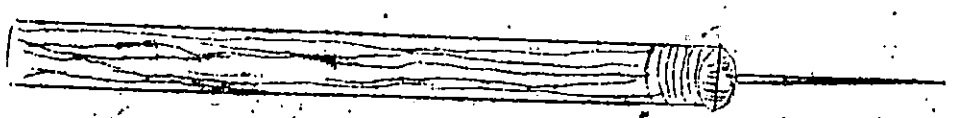
ALAT PENGGORES



GAMBAR 1 GAMBAR 2



Gambar 3



Gambar 4

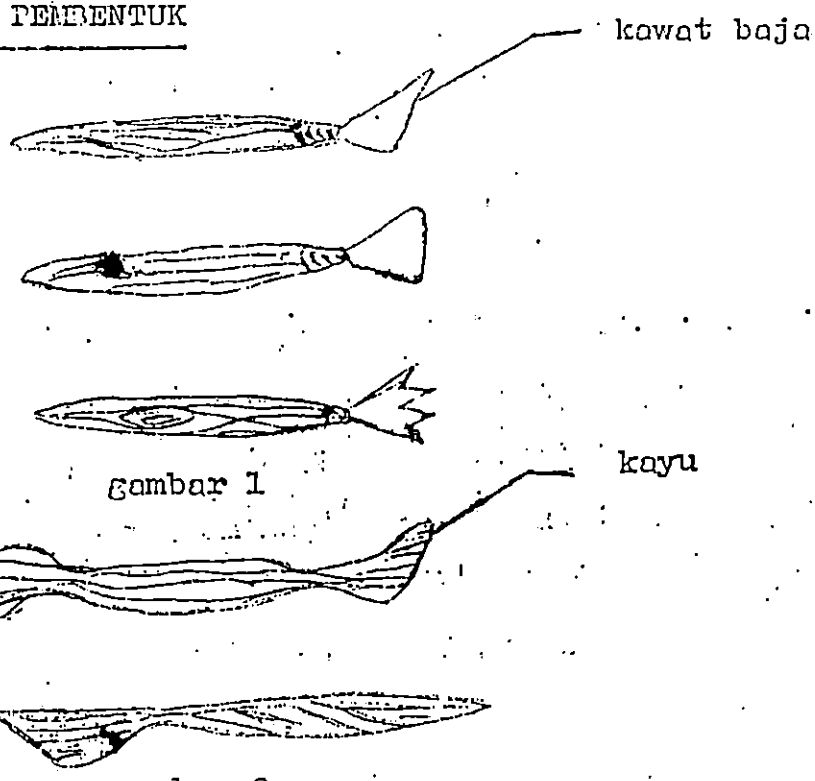
Alat penggores digunakan untuk menggores kertas dengan berpedoman kepada pola garis yang ada atau dapat juga langsung, dengan adanya gores tersebut patahan garis akan menjadi tegas dan bersih. Ujung penggores tidak boleh tajam karena akan menyebabkan kertas putus pada bagian goresannya.

Cara membuat penggores :

1. Sediakan sepotong kawat dengan ukuran diameter tertentu kemudian diasah sehingga runcing (gambar 1 dan 2)
2. Sediakan sepotong kayu dan diarut bulat, pada ujungnya dibuat lobang kecil dengan celah (gambar 3)

Jarum dimasukkan kedalam lobang tadi dan kemudian dililit dengan kawat dengan lilitan yang teratur sehingga kelihatannya baik. Dengan demikian selesailah alat penggores. Bila kita ingin alat penggores yang sudah jadi dapat dibeli sebuahpena shoet atau dapat dipakai jangka

ALAT PEMBENTUK



gambar 1

gambar 2

Alat pembentuk digunakan pada pekerjaan tertentu saja. Terutama dalam pembuatan benda benda dengan sistim bubur kertas sebagai bahan atau dengan paper Strip. Pembentukan dasar dengan bahan tanah liat dengan bentuk yang diinginkan dan ini dikerjakan dengan alat pembentuk diatas. Setelah bentuk itu selesai misalnya sebuah topeng maka selanjutnya dilapisi dengan bubur kertas atau kertas strip.

Alat pembentuk diatas dapat dibuat dengan cara :

1. Sediakan sepotong kayu untuk tangkai dan dibentuk sedemikian rupa sehingga enak dipegang.
2. Pada ujungnya dipasang kawat baja dengan bentuk yang kita inginkan. Kemudian pada pangkalnya dibalut dengan kawat agar lebih erat (gambar 1)
3. Alat pembentuk semuanya terbuat dari bahan kayu yang dibentuk menurut keinginan kita (gambar 2).

(sTp)

LAT PENYAMBUNG

Alat penyambung kertas dapat dipergunakan bermaca m
:cam, tergantung kepada peranya.
Alat a lat tersebut berupa :

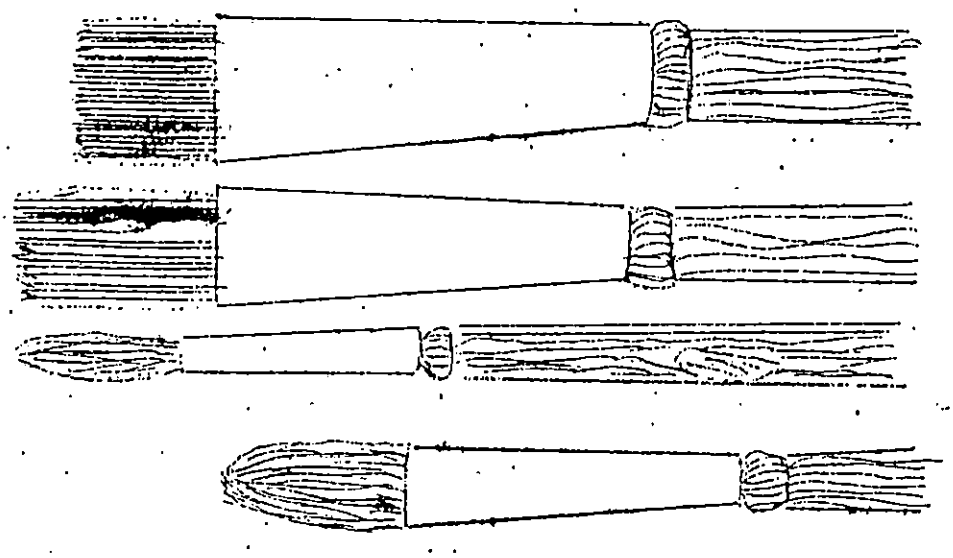
1. Disambung dengan benang dengan mengikat atau menjahit antara bahagian satu dengan bahagian lainnya.
2. Sambungan dapat juga dengan mema kai lem, baik lem yang dibuat sendiri (tepung kanji), lem sintetis,- (lem UHU , Aica Aibon) atau dengan mempergunakan plaster tip.
3. Disamping bahan dan alat diatas juga dapat dipakai Steple.

:sing masing alat tentu mempunyai kebaikan dan keburukan
ya dan ini bergantung kepada pemilihan kita sehingga
:ok dengan sambungan yang diinginí.

LAT MEWARNAI

Alat yang dipakai untuk mewarnai benda benda ke-
:jinan kertas dapat dipakai kugs dengan macam macam ca t
ais cat yang dipakai tentu saja disesuaikan dengan ke-
utuhan.

:am macam kuas



(sTp)

Macam-macam Cat

Cat yang dapat di pergunakan untuk kerajinan kertas adalah sebagai berikut :

1. Cat Plakat atau " Plakat verf "

   Cat plakat terdapat dalam botol dan dalam tube warnanya terdiri dari 12 macam dalam satu kotak, sedangkan yang dalam botol tersedia bermacam macam warna, terutama warna primer dan sekunder.

   Cat plakat diaduk dengan sedikit air dan sifatnya opaque atau menutup.Cat plakat cepat kering dan tidak luntur bila kena air. Daya rekatnya cukup baik dan tidak mengkilat.

2. Cat kaleng

   Cat kaleng yaitu cat yang biasa digunakan untuk mencat rumah Warnanya banyak variasinya. Setiap pabrik pengeluaran cat tersebut mempunyai variasi warna tertentu dan nama yang spesifik. Cat kaleng diduk dengan minyak cat dan keringnya kira kira 3 jam.

3. Cat tembok / cat didinding

   Cat tembok dapat juga dipakai untuk memberi warna hasil kerajinannkertas. Warnanya cukup banyak seperti cat kaleng . Cat tembok diaduk dengan air dingin dalam kadar tertentu sifat cat tembok menutup dan tidak luntur.

(sTp)

Masalah kertas sangat erat hubungannya dengan kebutuhan tulis-menulis atau cetak-mencetak di samping itu dapat pula digunakan untuk alat pembungkus umpamanya sebagai kantong, dus dan amplop, untuk dus menggunakan kertas tebal. Kertas merupakan bahan utama bagi para usahawan percetakan besar maupun kecil atau para usahawan di bidang pembuatan amplop-amplop, dus dan kantong pembungkus. Pengetahuan tentang/masalah kertas bagi yang berkecimpung dengan kertas merupakan suatu komponen fisikal yang utama dalam memenuhi hasil produksinya. Kertas yang kita gunakan sehari-hari memiliki jenis sifat, ukuran berat, warna dan masih banyak lagi kualitas-kualitas lainnya yang erat hubungannya satu sama lain dengan hasil produksi secara motif maupun fisiknya. Untuk hal tersebut mari ditelaah.

A. Perkem[illegible]kertas

Penge[illegible]kertas, telah diketahui dan diproduksi sejak kira-[illegible]alu. Kertas pertama kali dibuat di daratan Tiong-[illegible]ar tahun 105 sesudah Masehi.

[illegible]a pembuatan kertas yang pertama di daratan [illegible]u dalam abad ke-7 pengetahuan tersebut [illegible]ampai daratan Jepang.

[illegible]akai sebagai sarana tulis-menulis adalah [illegible]eringkan lalu digosok dengan serbuk. [illegible]sukar untuk diproduksi secara besar-

[illegible]empergunakan papyrus, dan buluh-[illegible]ar muara Sungai Nil. Lembaran-[illegible]dampingan sedemikian rupa se-[illegible] tulis-menulis.

[illegible]i daratan Laut Tengah, maka [illegible]esak sehingga di Yunani dan [illegible]t sebagai sarana tulis-menu-

kira abad ke-8 Masehi. Baru maju ketika para ahli pembuat kertas dari Tiongkok tertawan dalam peperangan oleh bangsa Arab, maka dalam waktu singkat menyebarlah teknik pembuatan kertas ke seluruh dunia Arab.

Pada tahun 793 Masehi, merupakan awal beroperasinya pabrik-pabrik kertas di daerah Bagdad dan di Samarkand, yang pada waktu itu di bawah pemerintahan Harun Al-Rasyid. Beliau menggunakan pekerja-pekerja dari daratan Tiongkok yang berstatus tawanan perang. Selanjutnya pusat pembuatan kertas berada di Damaskus yang menjadi sumber pensuplaian kertas untuk daratan Eropa dan berbagai kepulauan lainnya. Dari Damaskus keahlian membuat kertas tersebut secara berangsur-angsur masuk ke arah barat melalui daratan Mesir menuju Maroko dan masuk ke daratan Eropa. Pabrik kertas yang pertama didirikan di Eropa adalah Sisilia kira-kira abad ke-12.

Di daratan Tiongkok, untuk pertama kali kertas dibuat dari rombengan-rombengan jala ikan yang sudah tidak terpakai lagi, tapi selanjutnya mereka mempergunakan serabut-serabut tumbuhan sebangsa kulit pohon murbai. Caranya ditumbuk menjadi cairan bubur serabut, kemudian disaring dengan bambu lalu ditebarkan membuat lapisan tipis yang segera dijemur dan dikeringkan. Dari lapisan-lapisan yang tipis dan kering inilah pertama terjadi lembaran-lembaran kertas yang sifatnya kasar.

Pada abad ke-12 banyak orang Eropa mempelajari teknik-teknik pembuatan kertas tersebut dari bangsa Arab. Setelah Gutenberg menemukan teknik percetakan dengan mesin cetak modern, maka pemakaian dan kebutuhan kertas terus berkembang luas dan melonjak, sehingga kedudukan kulit kambing sebagai sarana tulis-menulis di dunia Barat semakin terdesak.

Begitu pentingnya peranan kertas di dunia ini, dapat kita bayangkan, bagaimana jadinya bila kehidupan kita sehari-hari tanpa kertas dalam berkomunikasi di masyarakat.

Bila kita tinjau sebelum Ts'ai Lun menemukan kertas di daratan Tiongkok, buku-buku dibuat dari kepingan-kepingan bambu yang telah disusun, sehingga seorang pejabat pemerintahan pada waktu itu, jika membawa surat-surat ke kantornya harus memakai gerobak beroda. Hal itu betul-betul merepotkan, di samping itu ada pula lembaran buku terbuat dari kain sutera, tapi harganya sungguh mahal.

Sebagaimana tadi telah diceritakan, bahwa di dunia Barat sebelum ditemukan kertas, mereka menggunakan sarana tulis-menulis di atas kulit

Berkat adanya perkembangan dan kemajuan-kemajuan dari kualitas kertas, maka sekarang berbagai bentuk buku dapat dihasilkan secara besar-besaran dengan harga relatif murah.

Akan tetapi harus kita ingat, bahwa peranan kertas tak akan begitu melonjak tanpa adanya perkembangan teknik mesin kegrafikaan, begitu eratnya hubungan dan kebutuhan secara timbal-balik antara kertas dengan mesin cetak yang harus didukung dengan harga kertas yang semurah mungkin.

Dengan adanya penemuan kertas ini di daratan Tiongkok, membawa pengaruh kepada kebudayaan Cina yang dengan cepat mampu mengimbangi kebudayaan dunia Barat.

Menurut sejarah orang-orang Eropa tidak memulai memproduksi kertas beribu-ribu tahun setelah Ts'ai Lun. Akan tetapi pikiran mereka baru terbuka untuk membuat kertas setelah mempelajari proses pembuatan kertas dari orang-orang Arab yang ahli dalam bidang itu dan berstatus tawanan perang.

Walaupun bangsa Asia telah memperhatikan kemajuan cara membuat kertas di Cina, namun mereka tak mampu untuk memproduksinya, sebab cara memproduksi kertas bukan pekerjaan gampang biarpun didukung oleh kebudayaan yang memadai.

Pada tahun 1800 Masehi cara pembuatan kertas telah dimodernisir dengan dasar yang sama seperti yang dilakukan oleh penemu pertama.

B. Bahan pembuatan kertas

1. Bahan dasar kertas

Bahan dasar kertas berasal dari kayu, kain bekas, kertas bekas, jerami, jenis rerumputan yang telah dimodernisir melalui pengolahan-pengolahan secara kimiawi di pabrik.

2. Bahan pembantu

Di samping bahan tersebut di atas ada pula beberapa bahan dasar pembantu yang mempunyai fungsi tertentu, dan terdiri atas:

a. Bahan pengisi, yang berguna dalam:

- Dapat mengurangi adanya ketembusan cahaya
- Dapat memperbaiki mutu hasil cetakan
- Ada kalanya dapat memberikan warna lebih baik dan cerah
- Dicampurkan ke dalam adukan cairan bubur
- Dilapiskan atau dilaburkan pada seluruh permukaannya
- Dikombinasikan dari kedua cara tadi

c. *Bahan pewarna*, yang memberikan bermacam warna.

3. Susunan kertas dinamakan:

- Bebas kayu (houtvrij).
- Berisikan kayu (houthoudend).

4. Daya tahan kertas

a. Kertas yang bahannya terbuat dari kain bekas, mempunyai *daya tahan tanpa batas*

b. Kertas yang bahannya dari sel mempunyai *daya tahan yang cukup lama.*

c. Kertas yang berisikan kayu, *tidak dapat bertahan lama.*

5. Mengandung kayu (houthoudend)

Jenis kertas ini terbuat dari serat tanaman, terutama serat dari pohon kayu. Kertas yang mengandung kayu tidak dapat tahan lama, karena serbuk kayu sebagai bahan bakunya memiliki serat pendek dan lekas pecah. Akan tetapi pada serbuk kayu yang telah dicampurkan 20 sampai dengan 80% bahan sel tertentu, baru dapat dibuat kertas yang kualitasnya rendah sekali dan harganya juga sangat murah. Serbuk kayu dalam bahasa asing dinamakan *houtslijp*, jadi kertas yang masih mengandung houtslijp dinamakan kertas mengandung kayu ialah houthoudend.

Houthoudend terbagi dalam:

- Houthoudend berat
- Houthoudend sedang
- Houthoudend ringan

6. Bebas kayu (houtvrij)

Jenis kertas bebas kayu terbuat dari serat tanaman. Untuk mendapatkan jenis kertas yang berkualitas baik, diperlukan bahan serat yang bersih dan memanjang. Dan untuk mendapatkan hal tersebut di atas, maka bahan dasar dimasak dengan beberapa jenis bahan kimia yang dapat memisahkan bagian-bagian kotor, yang tidak diperlukan lagi, sebangsa: songka, lignine dan pektine.

Setelah teraduk baik, campuran-campuran dari masakan tersebut menghasilkan adukan yang bukan kayu lagi, tapi merupakan bahan sel. Jadi kertas yang terbuat dari bahan sel, sudah bebas dari sifat kayu alam,

C. Serat kertas

Mengapa setiap jenis kertas maupun karton masing-masing mempunyai arah serat, karena pada waktu dibuat di pabrik-pabrik kertas, melalui suatu wadah band berjalan tanpa akhir dan menjurus ke suatu arah. Dengan sendirinya bagi serat-serat yang terdapat di dalam adukan bahan kertas tadi akan cenderung untuk menyusun sendiri garis-garis serat yang searah dengan jalur jalannya band mesin pembuat kertas tadi. Dan arah sejalan inilah yang nantinya bakal disebut sebagai arah serat atau urat kertas apabila kertas telah jadi.

Dalam hal ini perlu diketahui, bahwa semua kertas maupun karton mempunyai sifat lebih mudah dilipat maupun dilengkungkan pada satu jurusan serat (urat) daripada ke jurusan jalur serat yang berlawanan. Penyebabnya adalah letak jalur serat tadi.

Maka dengan adanya sifat yang demikian, akan menyebabkan adanya keterbatasan tertentu bagi penggunaan kertas maupun karton yang dilipat-lipat dan dilengkung-lengkungkan. Pada karton apabila akan dilipat atau dilengkungkan akan jelas sekali tanda arah serat itu, sebab sifat karton tebal.

Sebagai ciri bahwa kertas berserat, ialah bila dirobek maka bekas sobekannya akan mengikuti arah serat atau urat kertas itu, sejalan dengan kedudukan serat, memanjang atau memendek, dan dari hasil sobekan itu akan keluar seratnya.

Untuk mengetahui jalur serat, coba lentingkan atau lengkungkan selembar kertas atau karton, apabila berbekas atau patah-patah, itu tandanya arah serat tersebut berlawanan. Akan tetapi apabila lentingannya bagus, mudah dan tidak patah-patah, itu tandanya jalur atau arah serat sejalan. Sehingga kertas maupun karton akan lebih mudah dilengkungkan, disobek, dilipat-lipat, pada jalur yang sejajar dengan arah seratnya.

D. Berat kertas

Untuk mengetahui atau menetapkan berat kertas caranya, setiap 500 lembar kertas ditimbang beratnya dan akhirnya didapat ukuran berat dalam kg. Akan tetapi semua kertas maupun karton mempunyai ukuran tertentu yang telah dibuat oleh pabrik.

Umpamanya untuk 500 lembar jenis kertas yang berukuran 65 X 100 cm, sudah tentu nilai beratnya akan berbeda dengan 500 lembar yang berukuran 69 X 88 cm. Maka bila patokan kertas didasarkan pada ukuran saja akan menghasilkan ukuran yang tidak praktis.

[illegible] untuk setiap meter persegi. Cara ini sangat praktis sebab untuk satu partai kertas hanya berlaku satu bobot saja. Dengan demikian akan didapat standar bahwa yang disebut *kertas* adalah yang berbobot *di bawah 170 gram* per meter persegi, sedangkan bagi yang berbobot *lebih dari 170 gram* dinamakan *karton.* Selanjutnya bagi yang berbobot *lebih dari 600 gram* per meter persegi disebut *board.*

Ukuran ketebalan kertas tergantung pada banyaknya serat yang terdapat di dalamnya, juga tergantung pada volume hawa yang berada di sela-sela serat. Maka bagi kertas yang berbobotkan hawa lebih banyak dibanding dengan jumlah serat yang sama, ternyata sifat kertas tersebut lebih tebal daripada kertas yang telah dipres. Ukuran untuk ketebalan kertas ialah *mikron*, agar lebih jelas 1 mikron = 0,001 mm, dan sebagai alat pengukur ketebalan kertas dinamakan *diktemeter.*

Selanjutnya ada beberapa ukuran kertas yang perlu diketahui.

E. Ukuran satuan kertas internasional (Eenheids-formaten)

1. Deret "A"

Seri	Cm	Inci	Keterangan
A0	84,1 X 118,9	33,125 X 46,75	
A1	59,4 X 84,1	23,375 X 33,125	
A2	42 X 59,4	16,5 X 23,375	
A3	29,7 X 42	22.75 X 16,5	
A4	21 X 29,7	8.25 X 22,75	
A5	14,8 X 21	5,875 X 8,25	
A6	10,5 X 14,8	4,125 X 5,875	
A7	7,4 X 10,5	2,875 X 4,125	
A8	5,2 X 7,4	2 X 2,875	
A9	3,7 X 5,2		
A10	2,6 X 3,7		

Seri	Cm	Inci	Keterangan
B0	100 x 141,4	40 x 56,5	
B1	70,7 x 100	28,25 x 40	
B2	50 x 70,7	20 x 28,5	
B3	35,3 x 50	14,125 x 20	
B4	25 x 35,3	9,875 x 14,125	
B5	17,6 x 25	7 x 9,875	
B6	12,5 x 17,6	4,875 x 7	
B7	8,8 x 12,5	3,5 x 4,875	
B8	6,2 x 8,8	2,5 x 3,5	
B9	4,4 x 6,2		
B10	3,1 x 4,4		

3. Deret "C"

Seri	Cm	Inci	Keterangan
C0	91,7 x 129,7	36,75 x 51,875	
C1	64,8 x 91,7	25,875 x 36,75	
C2	45,8 x 64,8	18,25 x 25,875	
C3	32,4 x 45,8	12,75 x 18,25	
C4	22,9 x 32,4	9,875 x 12,75	
C5	16,2 x 22,9	6,375 x 9,875	
C6	11,4 x 16,2	4,5 x 6,375	
C7	8,1 x 11,4	3,25 x 4,5	
C8	5,7 x 8,1	2,25 x 3,25	
C9	4 x 5,7		
C10	2,5 x 4		

4. Deret "D"

Seri	Cm	Inci	Keterangan
D0	77,1 x 109	30,75 x 43,25	
D1	54,5 x 77,1	21,75 x 30,75	
D2	38,5 x 54,5	15,25 x 21,75	
D3	27,2 x 38,5	10,875 x 15,25	
D4	19,2 x 27,2	7,75 x 10,875	
D5	13,6 x 19,2	5,375 x 7,75	
D6	9,6 x 13,6	3,875 x 5,375	
D7	6,8 x 9,6	2,75 x 3,875	
D8	4,8 x 6,8	1,875 x 2,75	
D9	3,4 x 4,8		
D10	2,4 x 3,4		

5. Ukuran kertas yang dipakai oleh umum

Seri	Cm	Inci	Keterangan
½ Kuarto	14 x 21,5	5,75 x 8,75	

Kuarto	21,5 x 28	8,75 x 11,25	
½ Folio	16,5 x 21,5	5,75 x 8,75	
Folio	21,5 x 33	8,75 x 13,25	
Dobel Folio	33 x 43	13,25 x 17,25	
Empat Folio	43 x 65	17,25 x 26	
Plano	61 x 86	24,375 x 34,375	
Plano	65 x 87	26 x 34,75	
Plano	65 x 100	26 x 40	
Plano	79 x 109	31,75 x 43,75	

F. Daftar nama kertas, ukuran dan beratnya

No. Urut	Macam kertas, karton, board	Ukuran inci *)	Berat/lbs.
1.	Acid Free Jewellers Tissue	–	–
2.	Air Mail (Onion Skin Finish)	16,5 X 21	8,375 Rag. Content
3.	Azure Laid Ledger	27 X 34	60
4.	Baryta Paper Semi Matt**)	22 X 25	56
5.	Blotting	–	–
6.	Broad Laid Writting	16,5 X 21	18
7.	Burni Directory Printing	30 X 40	52
8.	Burni Drawing Caetridge	22 X 30	60
9.	Burni Special Offset	30 X 40	90
10.	Cast Coated	–	–
11.	Chromo Board (8 sheet)	–	–
12.	Cream Wove Cheque	21 X 33	36
13.	Cream Wove Writing	27 X 34	48
14.	Document Manila	28 X 37,5	162
15.	Duplicator (Hard Sized)	27 X 34	44
16.	Embossed Offset (Sand grain)	–	–
17.	Goatskin Parchment**)	23 X 36	70 Rag.
18.	Illustration S/C Printing	35 X 45	68 Part Mechanical
19.	Imitation Art	23 X 36	36
20.	Ivory Board (4 sheet)	–	–
21.	M.F. Printing**)	22,5 X 35	36
22.	M.G. Litho**)	30 X 40	–
23.	M.G. White Lined Manila	–	–
24.	Paste Board (10 sheet)	–	–
25.	Standard Bond	21 X 33	36
26	Standard Offset Printing**)	30 X 40	90
27.	Sulphite Varnishing Litto	–	–
28.	Superfine Art.**)	23 X 36	36
29.	Superfine Bond (Rubbermarked**)	21 X 33	48
30.	Superfine Bond (Rubbermarked**)	21 X 33	36
31.	Super Calendered Printing	22,5 X 35	48
32.	System Board**)	25,5 X 30,5	140
33.	Ticket Manila**)	28 X 37,5	162
34.	Wet Strength Offset Printing	40 X 40	90
35.	White Bank**)	21 X 33	22
36.	White Wove Drawing**)	27,5 X 40	135 Rag. Content.

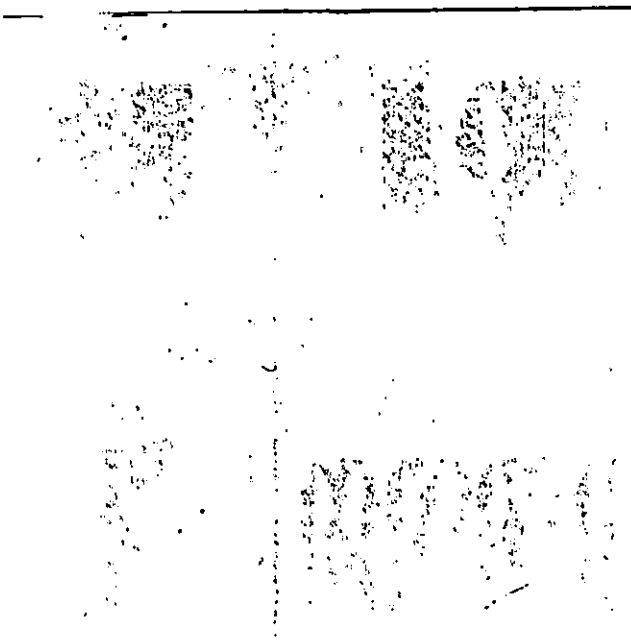
*) Inci, Inch, Dim = ½ kaki ± 2,54 cm.
**) Karton/kertas jenis ini hanya untuk order khusus.

BAHAN BACAAN

POKOK BAHASAN 3

1. Ernst Rottger, Creative Paper Design, Rein Hold Book Corpration, New York Amsterdan London,1961. hal.30-39

2. Pauline Johnson, Creating With Paper, Basic Form and Variation, University of Washington Press, 1958, hal.144-151



Transformation by folding

Paper of every kind can be used for this purpose, as long as it is to some degree transparent. Tissue pap
be placed against a black background, having first been folded. This will give it the quality of a delicat
The task: to divide an area into regions of grey by folding.
Basic shape, and number and run of the folds are determined by rules.

Again: nothing must be added or taken away.

It is advisable to work against a larger, double sheet of transparent paper, so that the results can be ch
at each stage by holding the double sheet against the light. If the final result is satisfactory, the paper
pasted down in one or two corners (paste must be used very sparingly in work of this kind, because it is
leave marks).

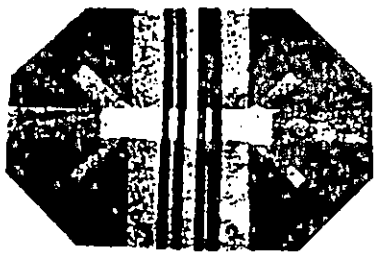
Figures 89-95: starting from a square

Figure 96: starting from a circle

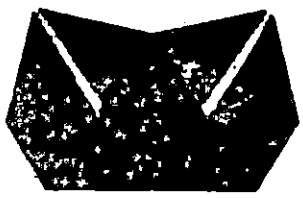
Figure 97: starting from a triangle

It is only after, with the entire uncut area, that we start with cutting out and re-arranging individual s

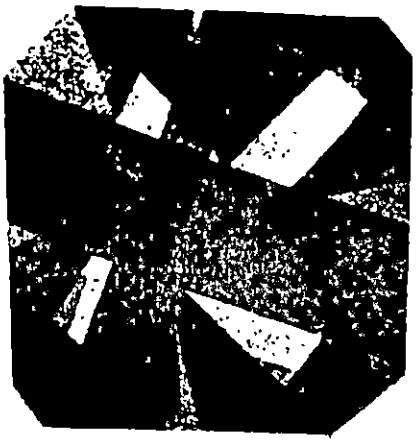
89 V



90 M 13

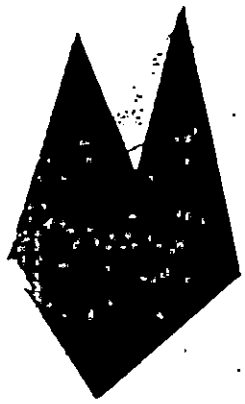


91 M 12

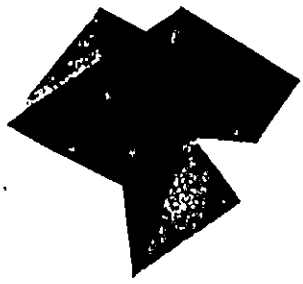


92 J 14

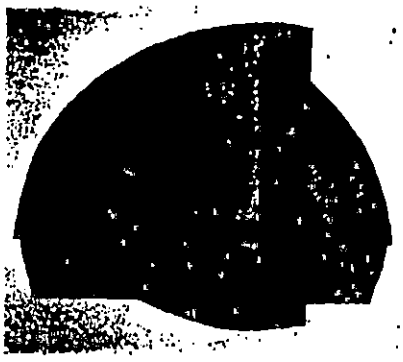
93 V



94 V

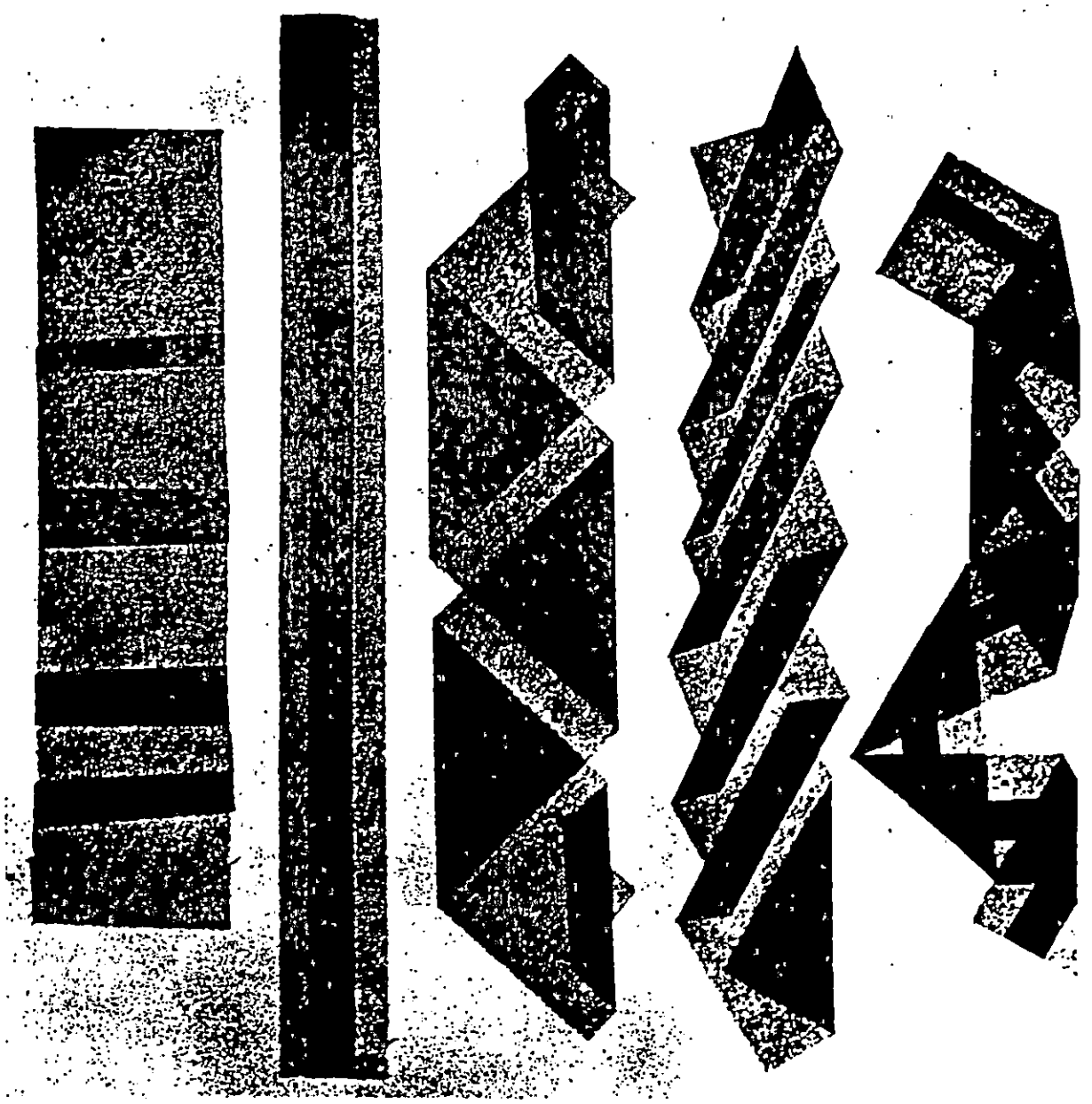


95 V



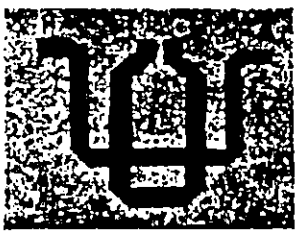
96 V

97 V



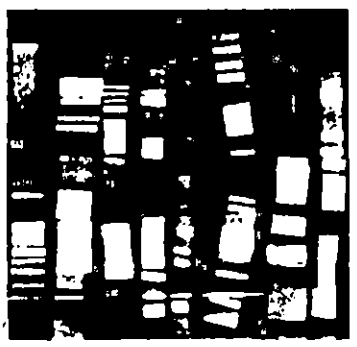
98 99 100 101

103 V



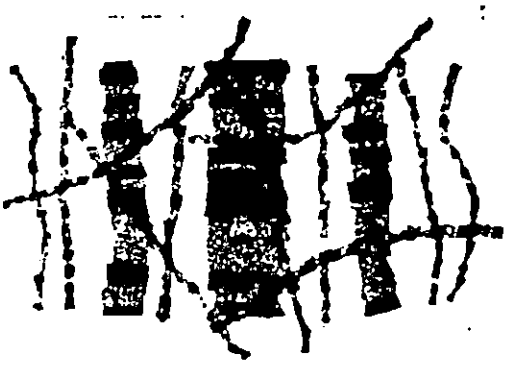
104 J 12

105 V



106 V

107 V



108 V

Figures 98-102: ways of folding strips of paper

Figures 103-8: here, the task was to group strips of paper

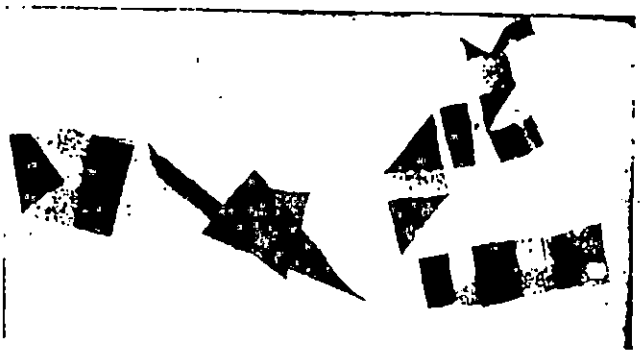
Figure 103: two tapered strips of paper, folded to produce a straight and a curved line respectively

Figures 104-5: two strips of equal width, folded at a right angle, placed on top of each other at a right angle

Figure 106: a particularly striking arrangement of strips of different width, folded several times in places

Figures 107-8: arrangement of torn strips

Note: Figures 103, 106, 110 and 116 are reproductions of negatives. The forms therefore appear dark where they should be light and vice versa



109 V —

110 L

111 M 14

USING STRIPS OF PAPER

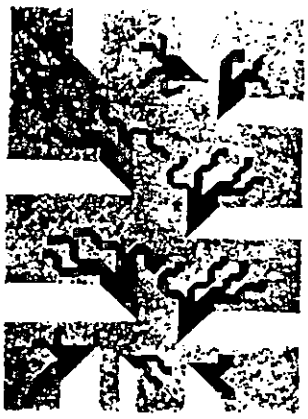
Figure 109: a branch

Figure 110: trees

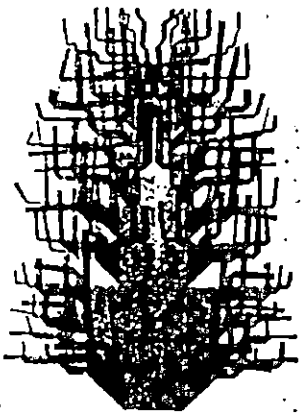
Figure 111: flower and butterfly

Figures 112-19: transformation of a rectangle (f. transformation of a circle) through cutting folding back at right angles

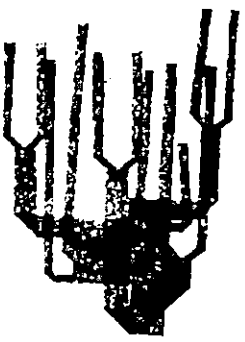
Figure 115: another example based on the r which, in this case, has only been cut into at a ri on one side, rather like a comb. The strips have : folded at right angles only



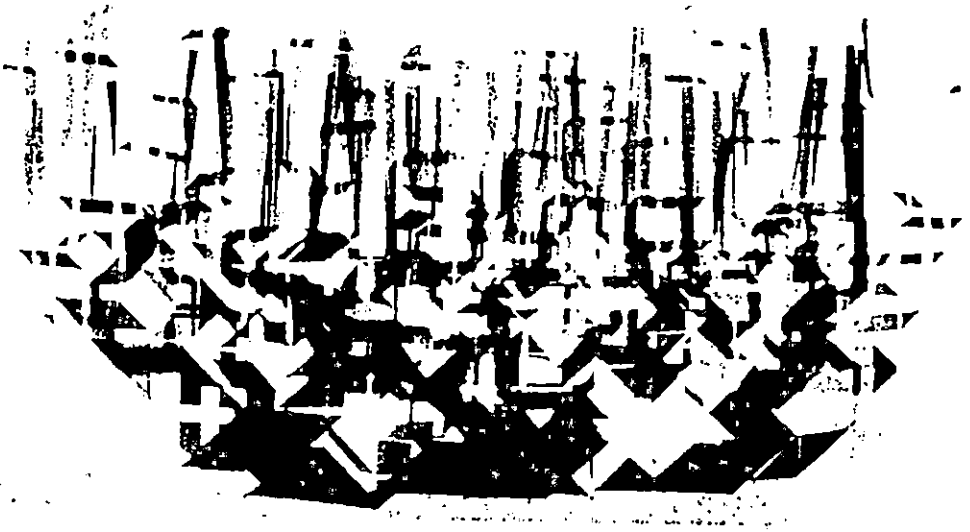
112 J 13



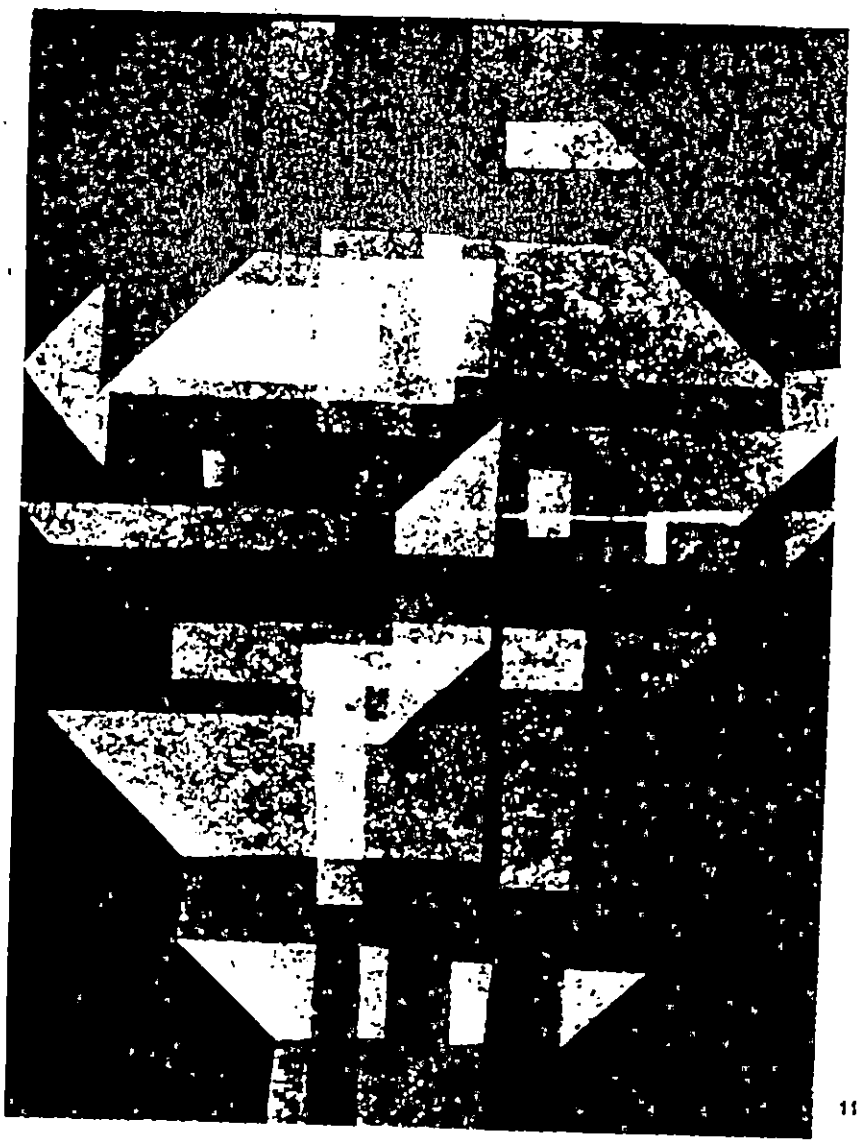
113 V

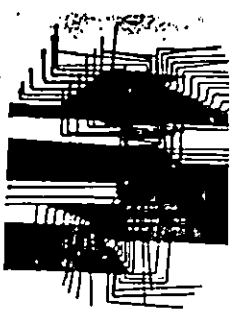


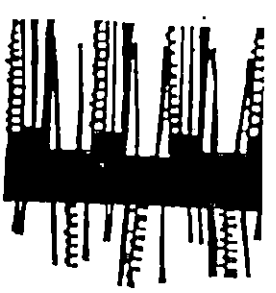
114 V



115 V



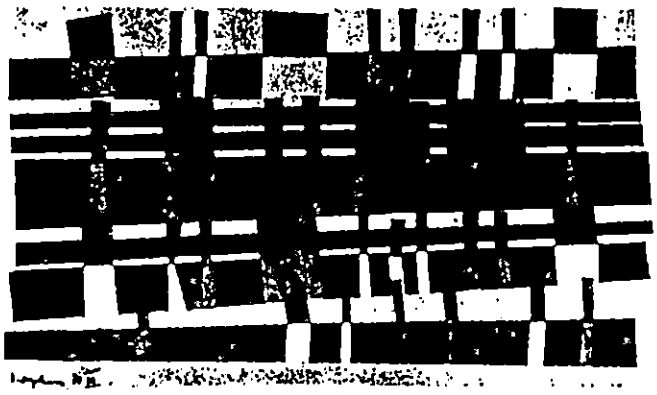




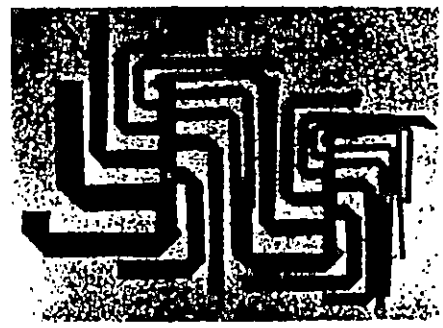
116 L

Figure 116: a rectangle, cut into at a right angle and folded. Some of the shapes are the product outwards

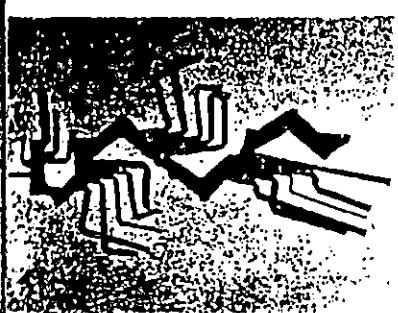
Figure 120: breaking up a square by cutting into at right angles and folding. (used as design for ; replacing the shades of grey with colours)



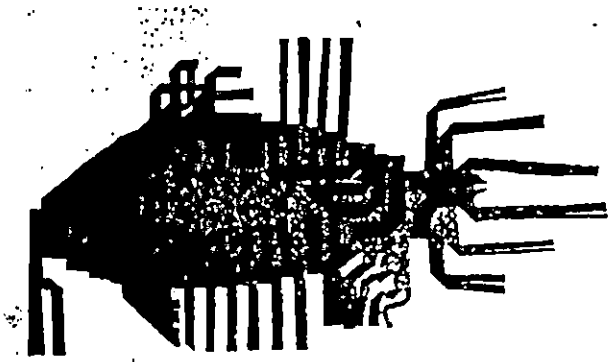
121 M 15



122 V



123 V



124 V

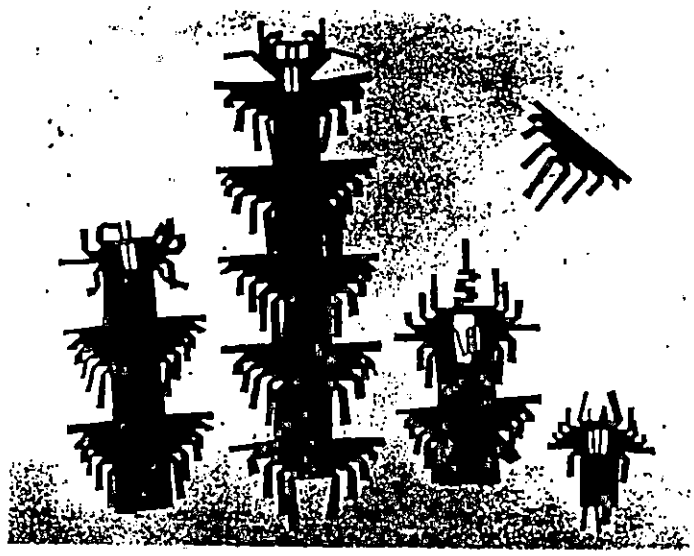
ure 121: dividing an area by folding horizontally and opening out and folding back some squares

ures 122-3: further break-up of the original area

ure 124: the outline of a fish was drawn on a square piece of paper, and cuts could only be made as far a
, at a right angle. The strips were then folded, producing the effect shown in the illustration

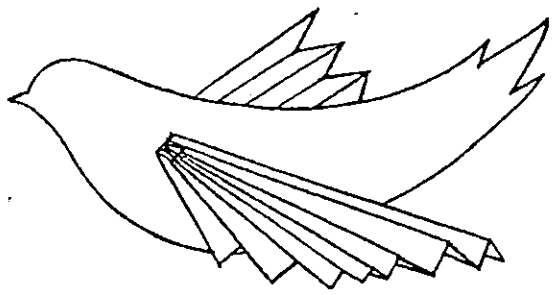
ures 125-6: grouping forms within the given area

125 V



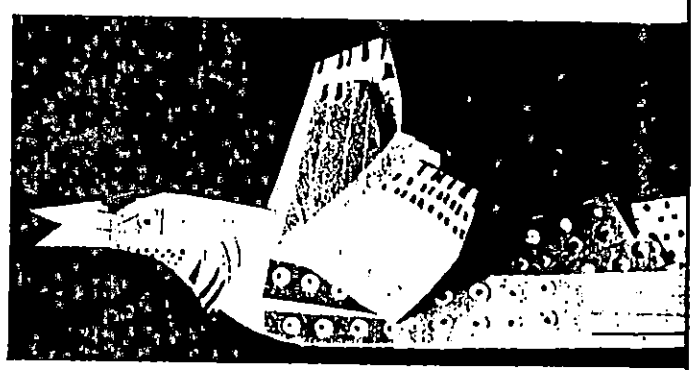
126 V

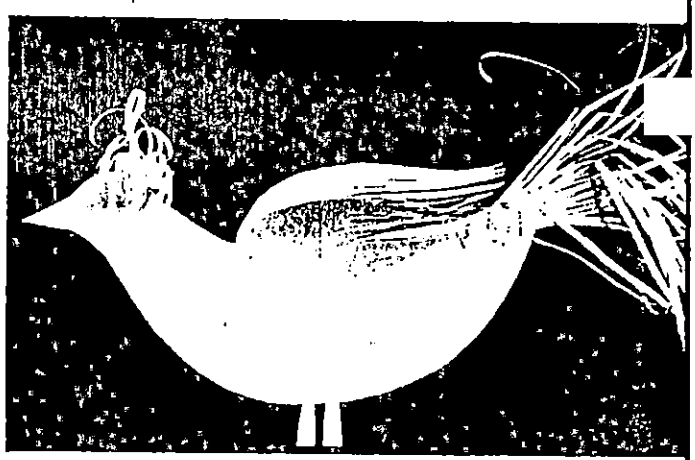
BIRDS

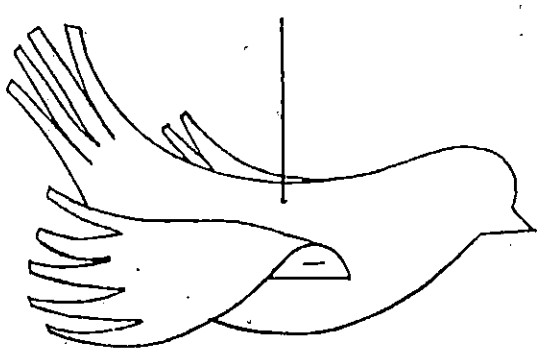


A

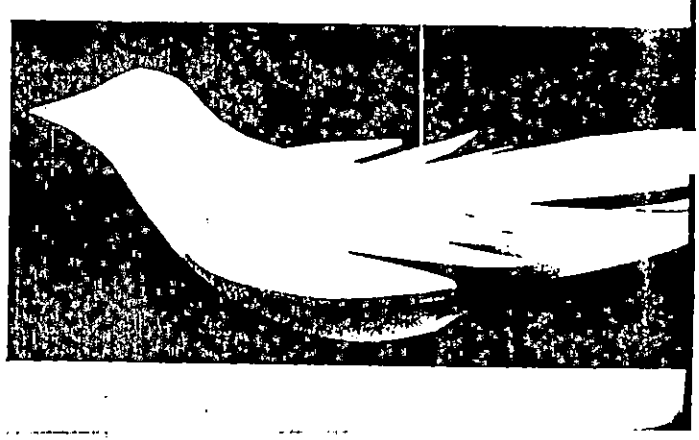
Birds, like stars, make festive holiday decorations. When suspended on threads they swing in the air currents in changing moving patterns. The birds shown here are cut from a flat piece of paper, with wings attached on either side. The wings may be pleated, curved, fringed, bent, or rolled, and stapled or pasted to the body shape. The birds on the facing page are folded in half, with the fold coming either on top or at the bottom of the form. The wings and tail can either be cut in one piece with the body or attached separately. Both thin and rather heavy papers can be used for exploring ideas, and it is important to keep in mind that birds should be imaginative and creative rather than naturalistic. Gay colored papers as well as paint, including gold and silver, are effective additions.

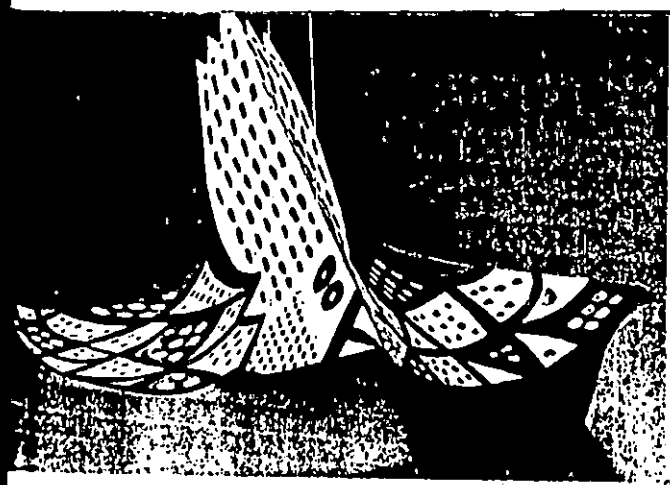


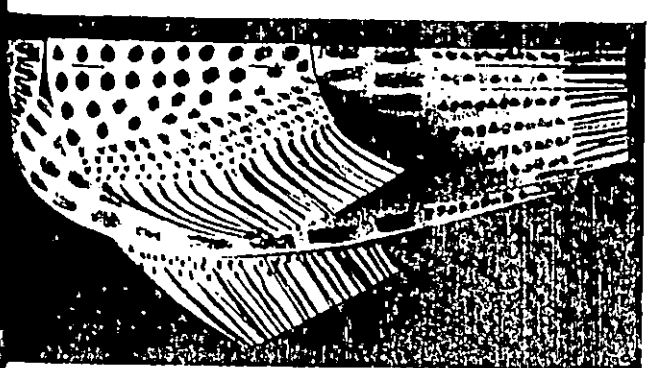


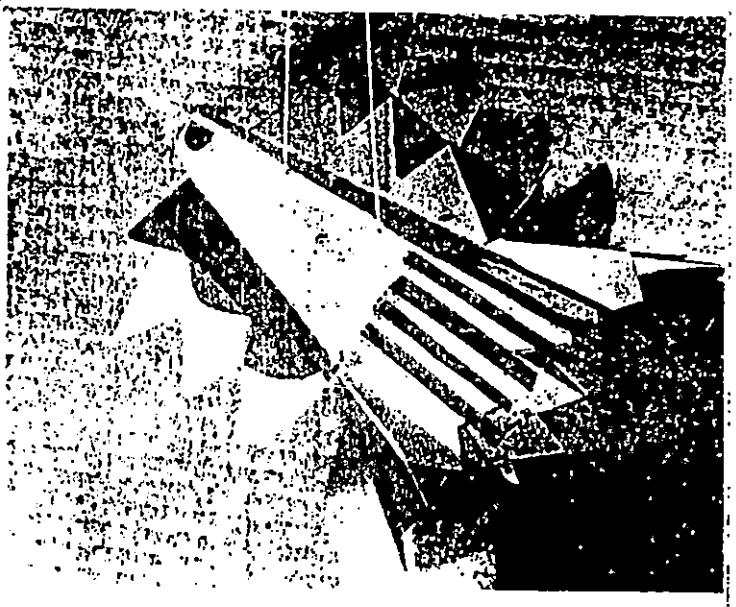


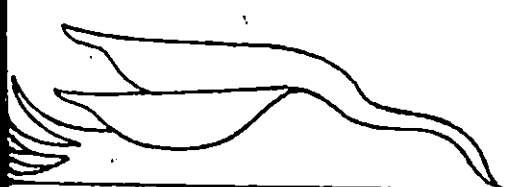
B









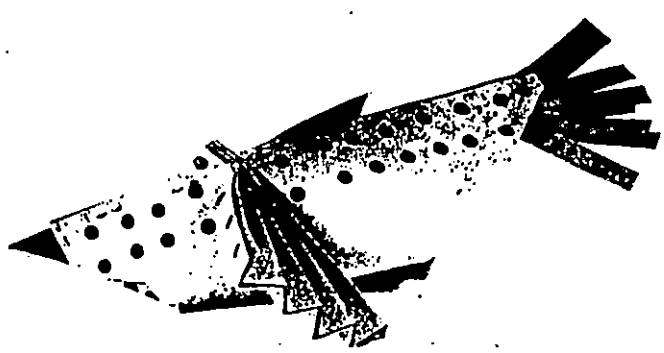


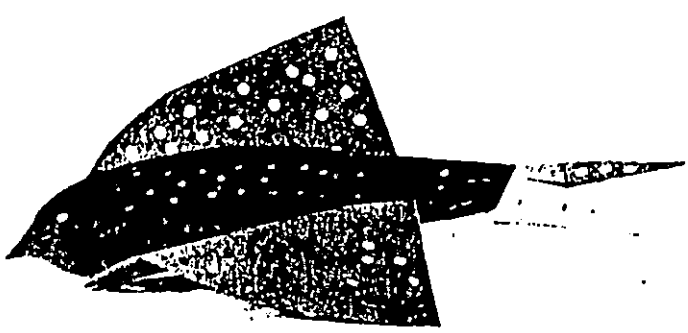
fold

C

fold

D

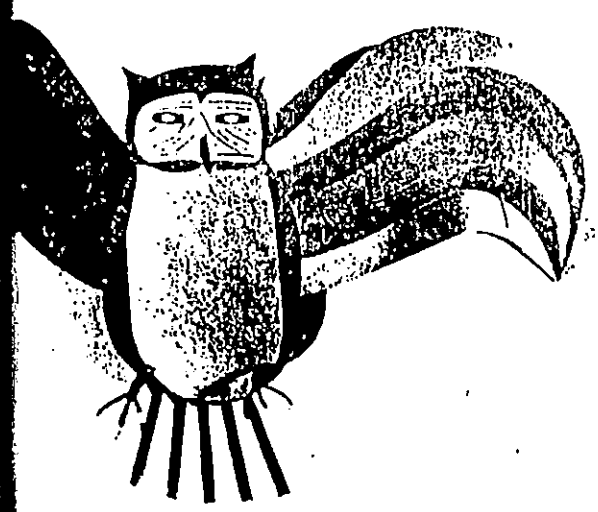




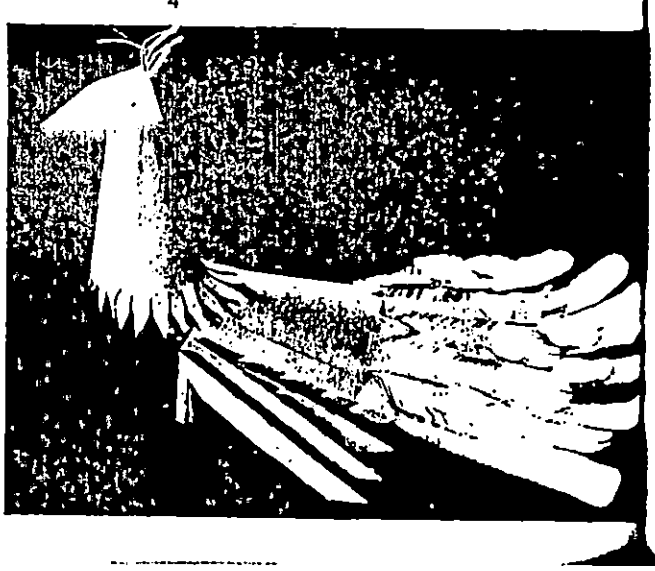
1

2

3

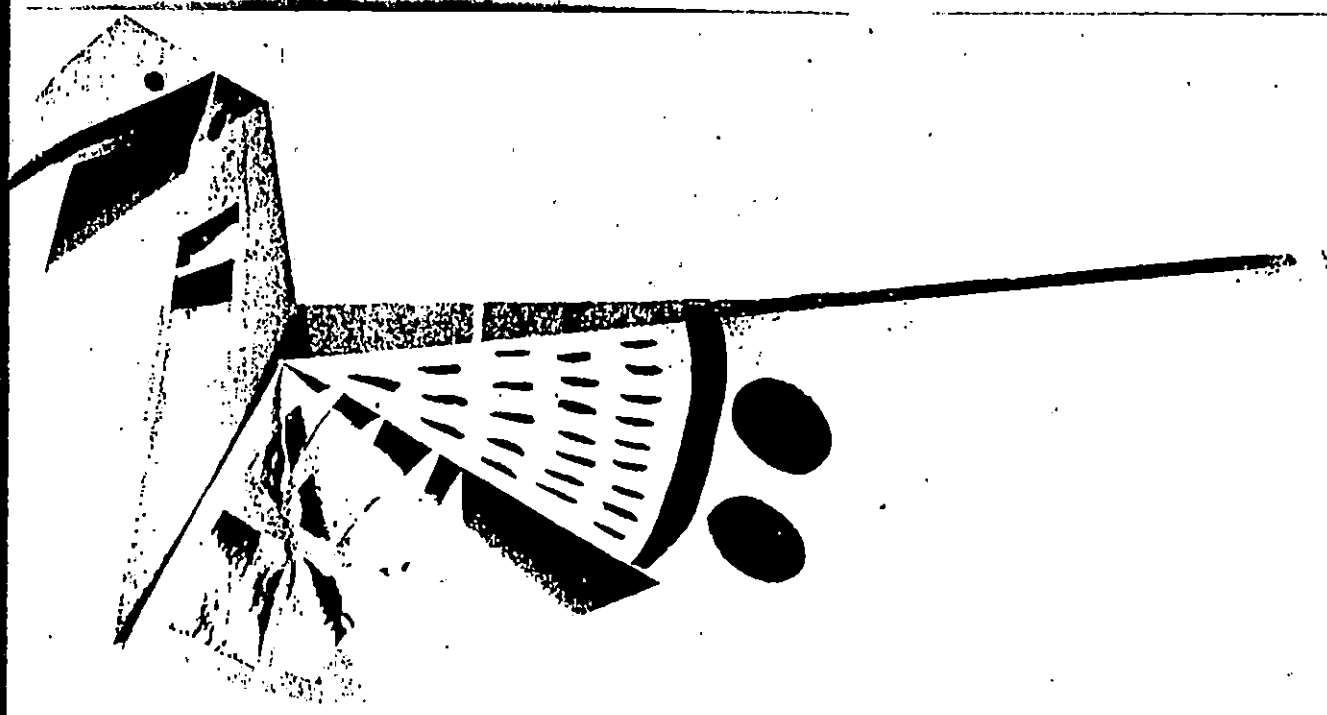


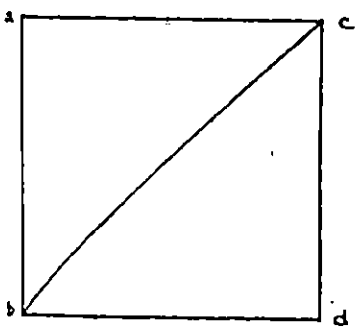
4



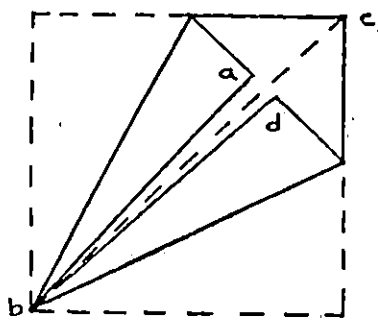
The birds on this page are formed of several parts rather than cut from a single piece of paper. They have more detail than the previous examples and rely upon cut areas, scorings, cut paper pieces, and fringe for interest. The examples in figures 2 and 4 are built upon cone shapes. The head of the peacock is attached to the neck with a small brad that serves a double function as an eye. The turkey in figure 1 is structured of lightweight white Bristol with scraps of colored papers added for contrast. In figure 3 the head and body of the owl are cut from one flat piece of paper with the back and front cut identically. The face and breast are superimposed over the front, and the wings are scored and inserted between the front and back pieces.

The birds and the carp on the five pages following are traditional Japanese paper folds based upon the square. In Japan, paper folding is a popular pastime for both children and adults.

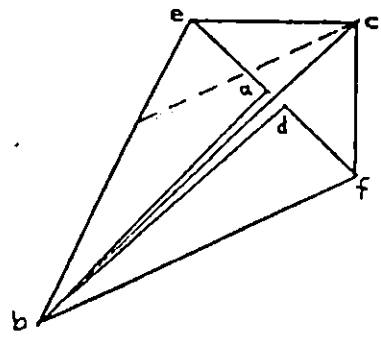




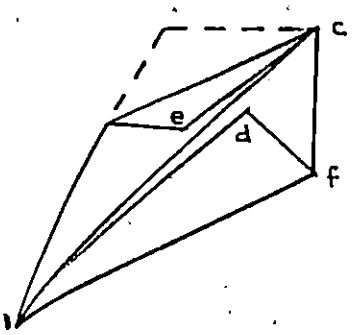
Crease square on diagonal.



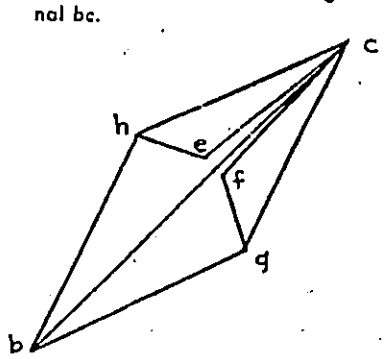
Bring sides *ab* and *bd* to diagonal *bc*.



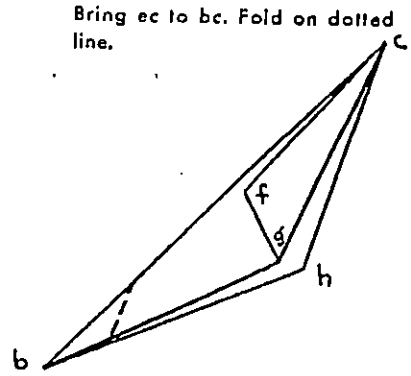
Bring *ec* to *bc*. Fold on dotted line.



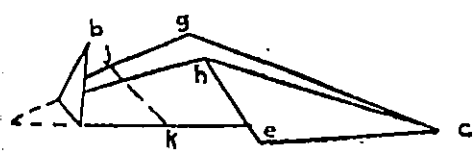
Bring *cf* to *bc* and crease.



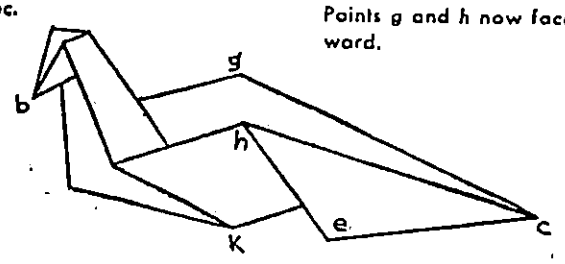
Fold along *bc*.



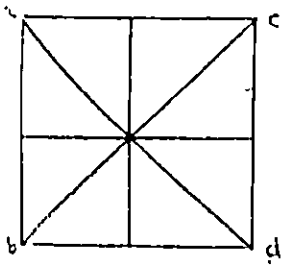
Points *g* and *h* now face downward.



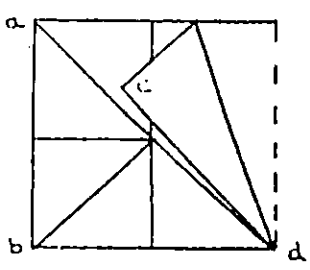
Turn shape upside down. Fold up tip *b* for head. Crease *jk* for neck. Push shape inward to form neck and head.



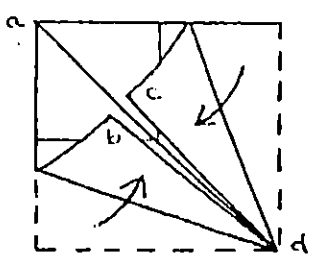
Decorate completed bird with paint or colored papers and suspend on a thread.

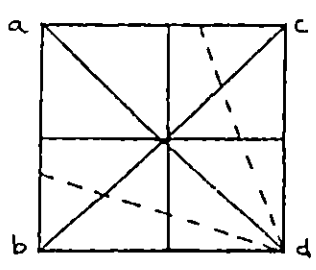


Crease a square on diagonal, vertical, and horizontal lines.

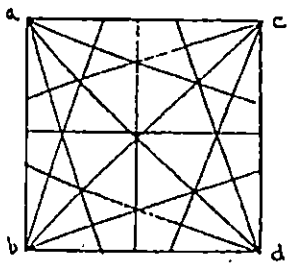


Fold corner c along diagonal *ad*. Fold corner b along some diagonal, as in making a paper airplane.

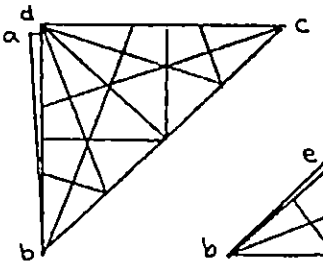




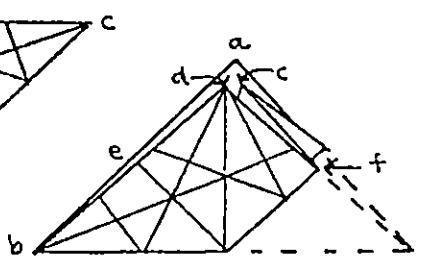
Open the folds and note creases radiating from *d*.



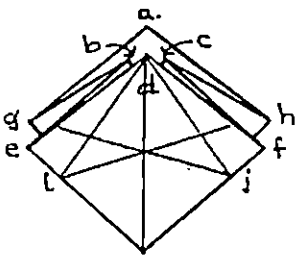
Do the same from *a*, *b*, and *c*. The creases will appear as above.



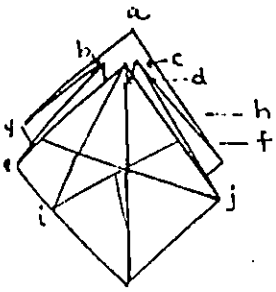
Fold square on one diagonal.



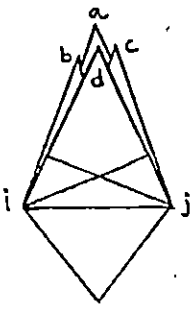
Grasp point c and push it up and in between points *a* and *d*.



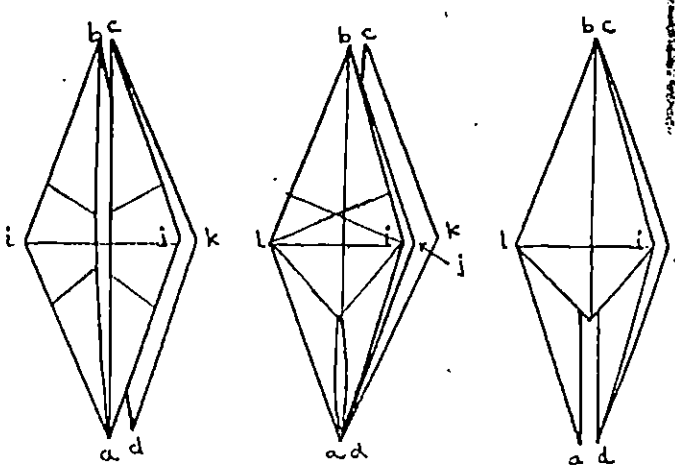
Do the same with point *b*, pushing it in to meet point *c*.



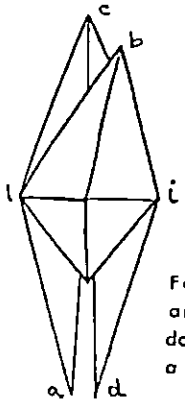
Push point *f* in along the creased line *dj*. Push point *h* in also. Do the same with points *e* and *g* along *id*.



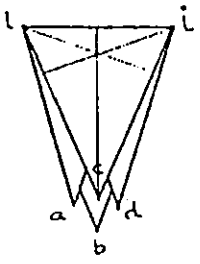
Fold point *d* down along line *ij*. Turn over and fold down point *a*.



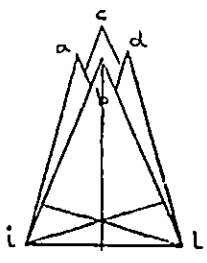
Fold point *i* over onto *j*. Fold point *k* back behind *l*.



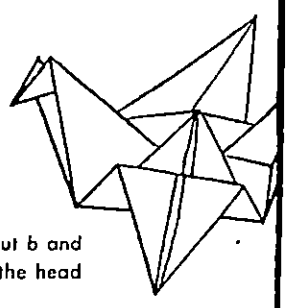
Fold along line *li* and bring point *c* down to meet points *a* and *d*.

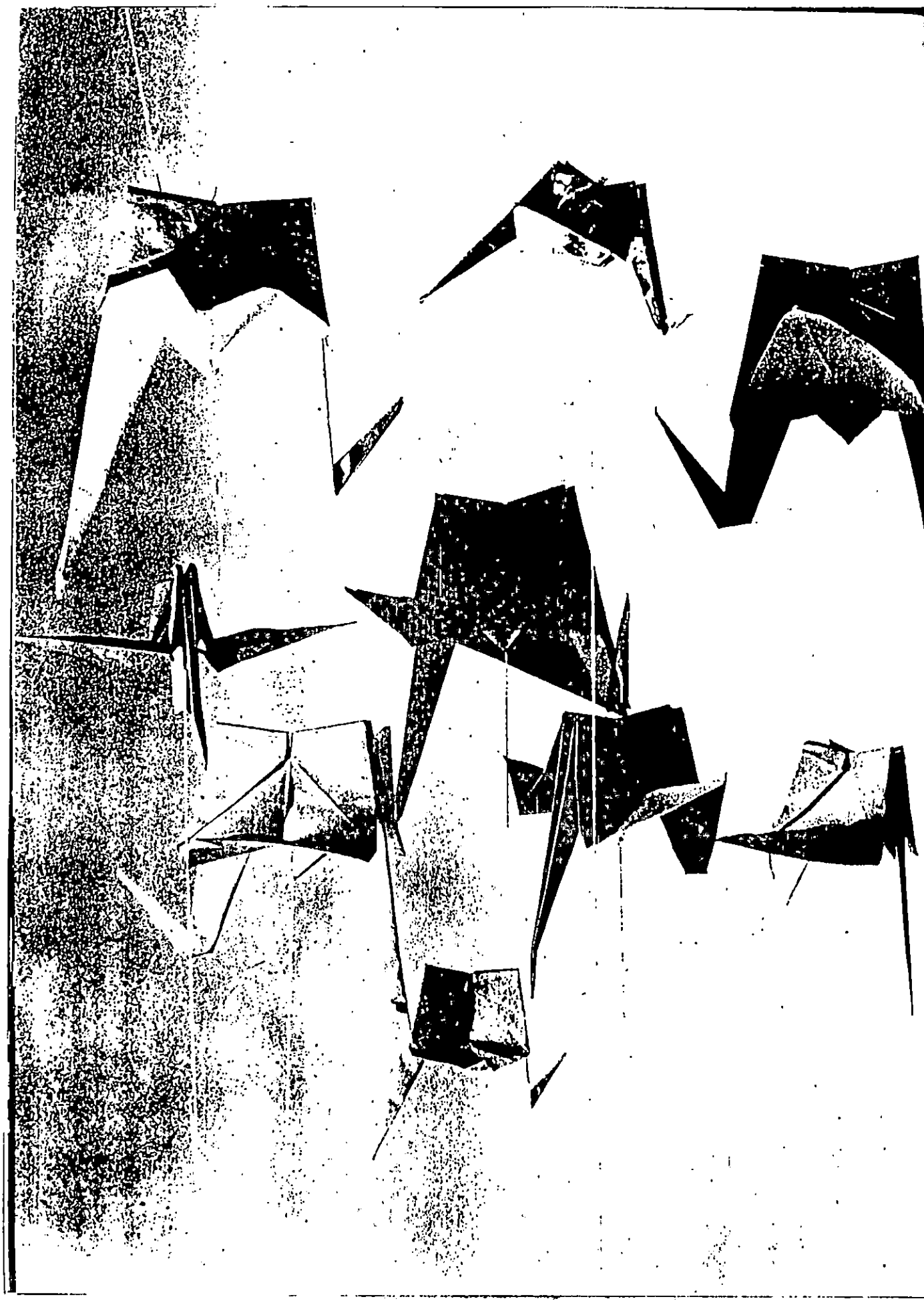


Turn over and fold down point *b*.

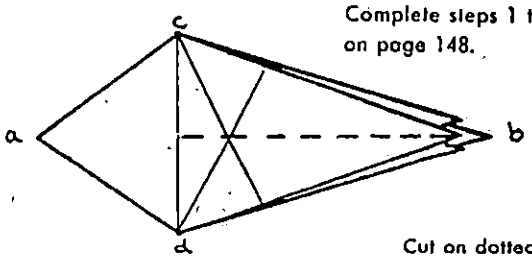


Turn shape upside down. Pull out *b* and *c* to form wings. *a* and *d* form the head and tail.

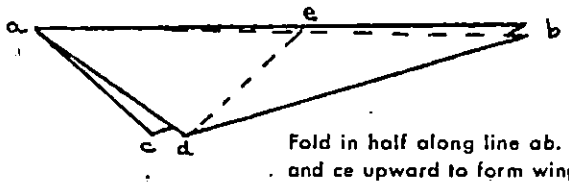




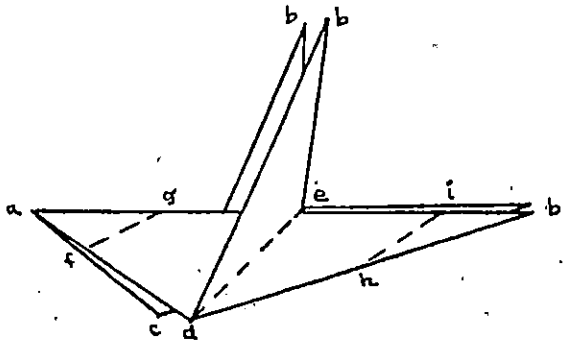
Complete steps 1 to 10 for bird on page 148.



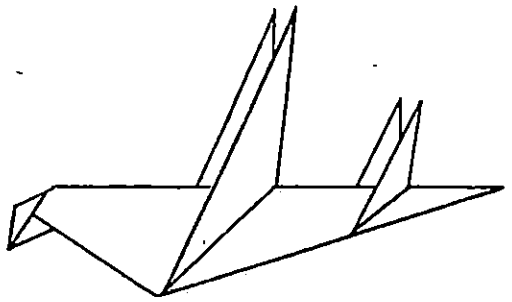
Cut on dotted line through top layer only.



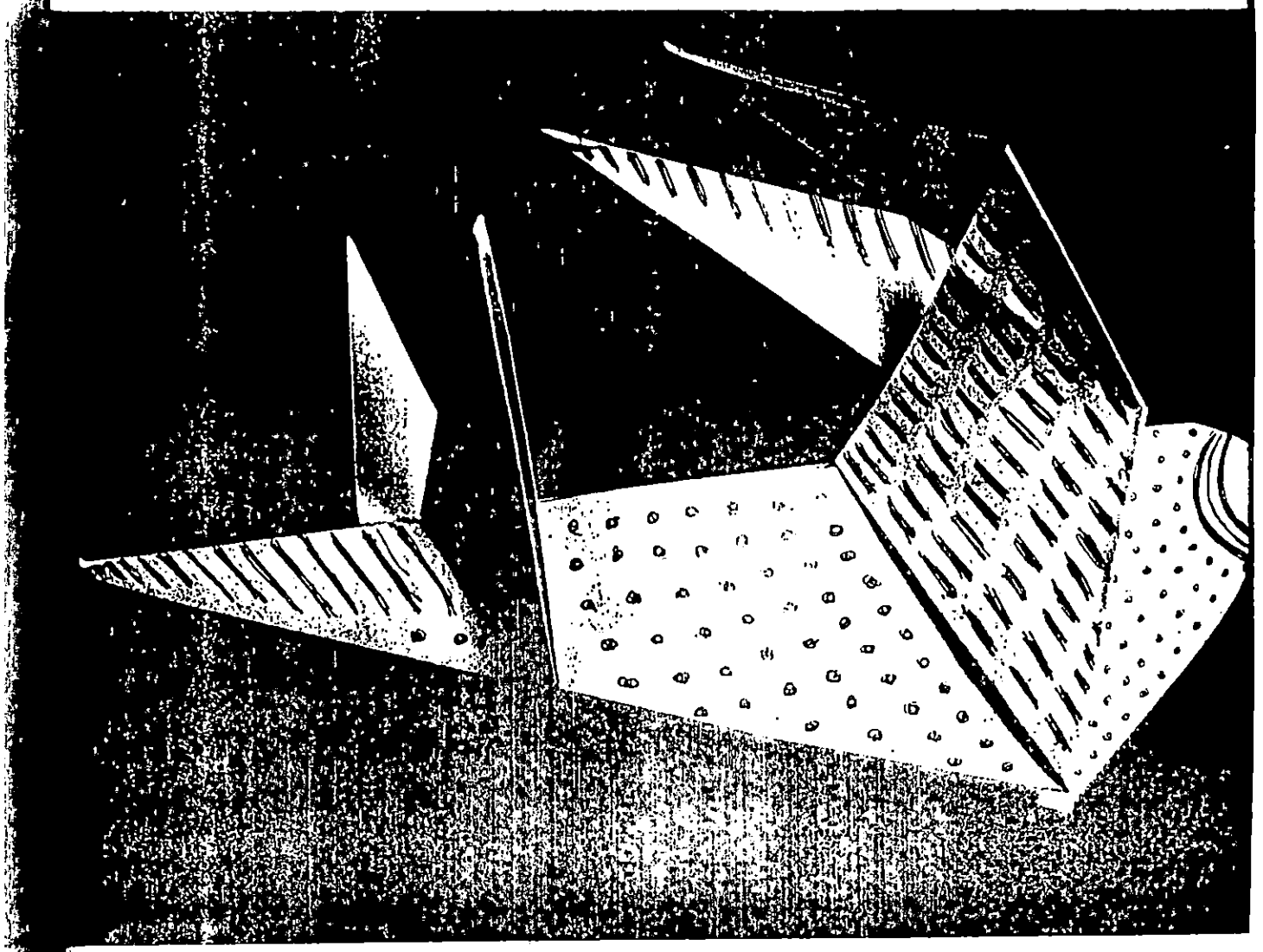
Fold in half along line ab. Crease and ce upward to form wings.

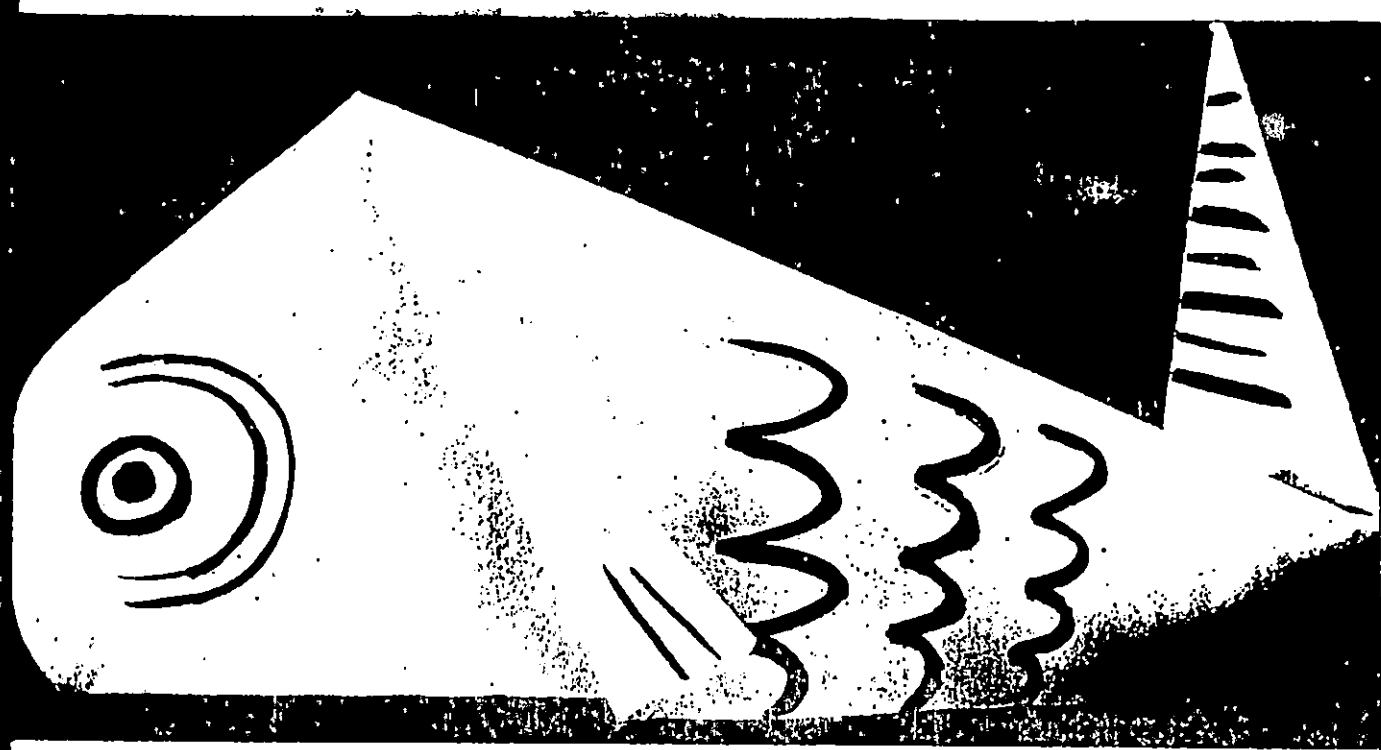


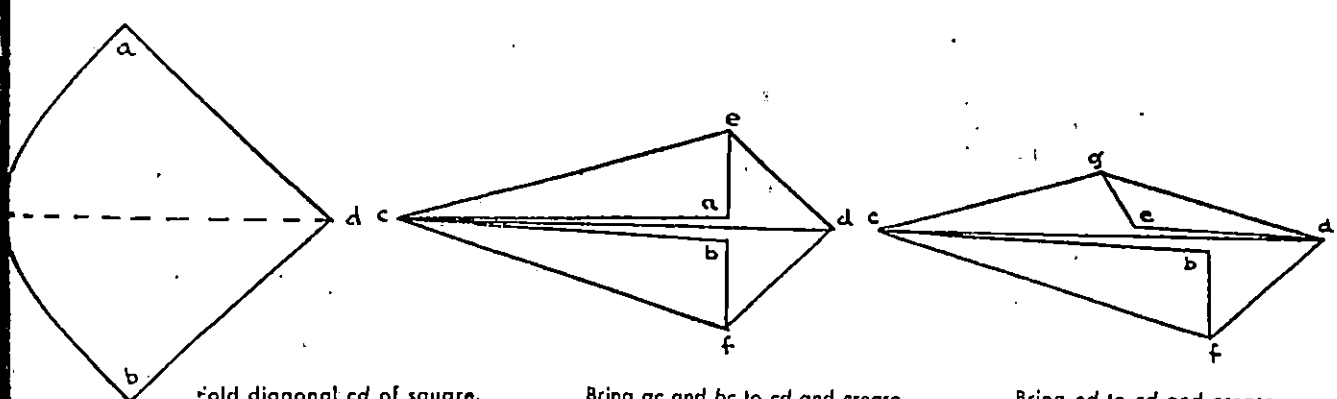
Fold up tail pieces along *hi*. Crease *fg* to form head.



Push the top fold of the head down and in. Try colored tissue paper.



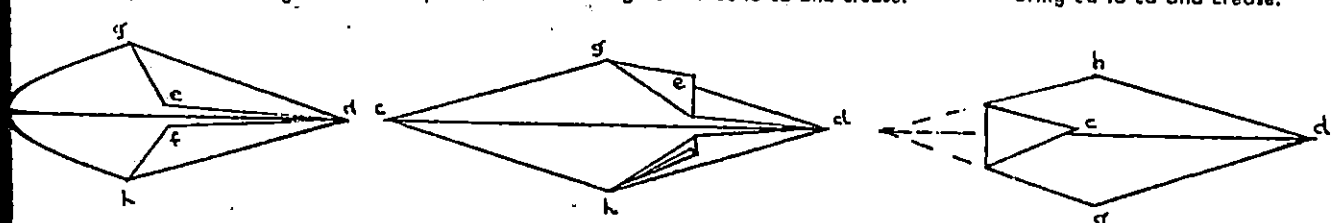




Fold diagonal *cd* of square.

Bring *ac* and *bc* to *cd* and crease.

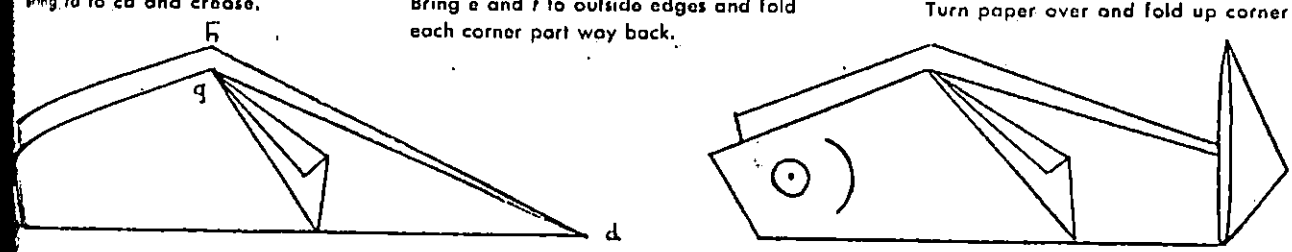
Bring *ed* to *cd* and crease.



Bring *fd* to *cd* and crease.

Bring *e* and *f* to outside edges and fold each corner part way back.

Turn paper over and fold up corner *c*.



Fold up so that point *g* meets point *h*. Crease *cd*.

Fold up tail. Add point for details.

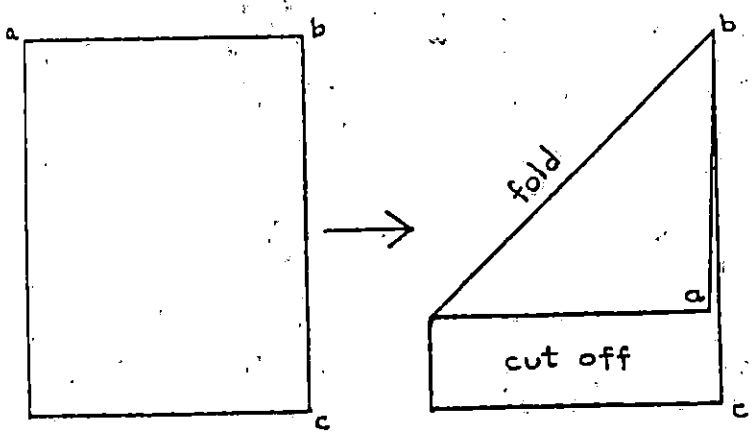
BAHAN BACAAN

POKOK BAHASAN 4

1. Pauline Johnson, Creating With Paper, Basic Form and Variation, University of Washington Press, 1958, hal.15-13

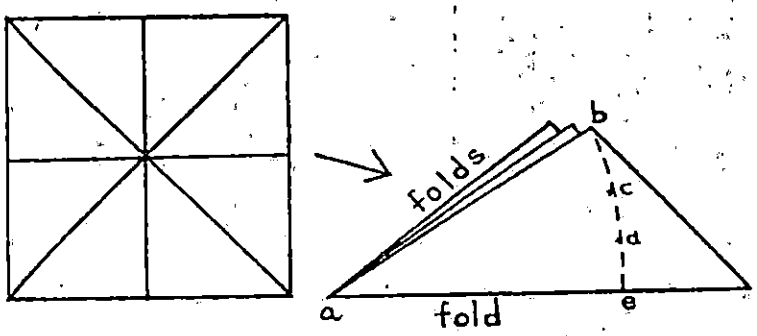
2. Ernst Rottger, Creative Paper Design, Rein Hold B Book Corpration, New York Amsterdan London 1961, hal.9-12

CUTTING



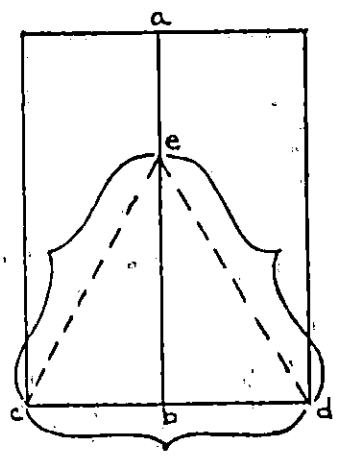
CUTTING A SQUARE

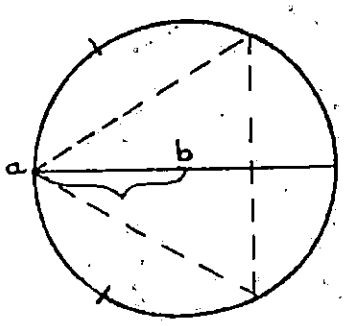
Bring side *ab* of a rectangle over to side *bc* and cut off extra piece below.



CUTTING A CIRCLE

Fold a square in half on the diagonal, forming a triangle. Fold in half again, and then in half again. Using *ab* as a measure, mark *ac*, *ad*, and *ae* and cut a connecting arc.

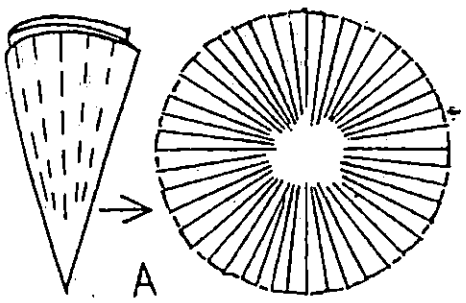




CUTTING A TRIANGLE

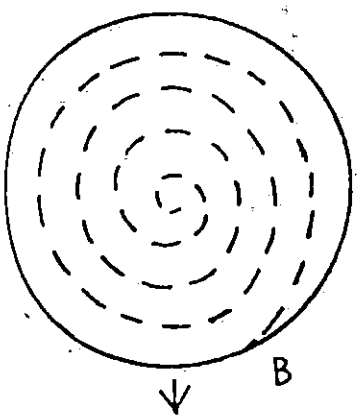
For an equilateral triangle, fold a rectangle in the center to get line *ab*. Draw a line *ce* the same length as *cd* and connect points *ed*. Or take the radius of a circle, *ab*, and mark off six times around the circumference. Connect every other point.

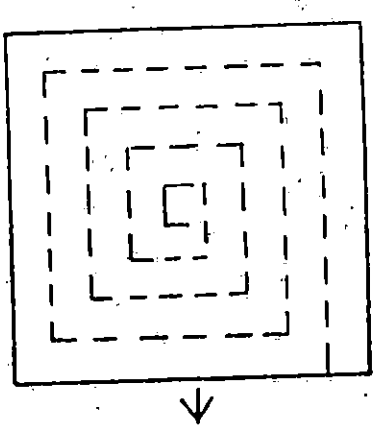
EXPANDING

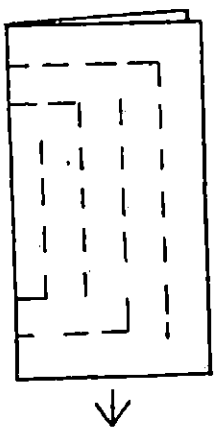


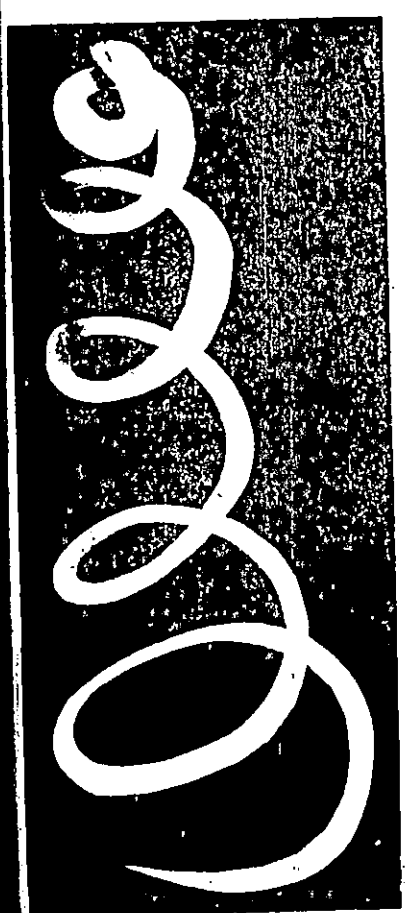
Fold a circle and cut fringe.

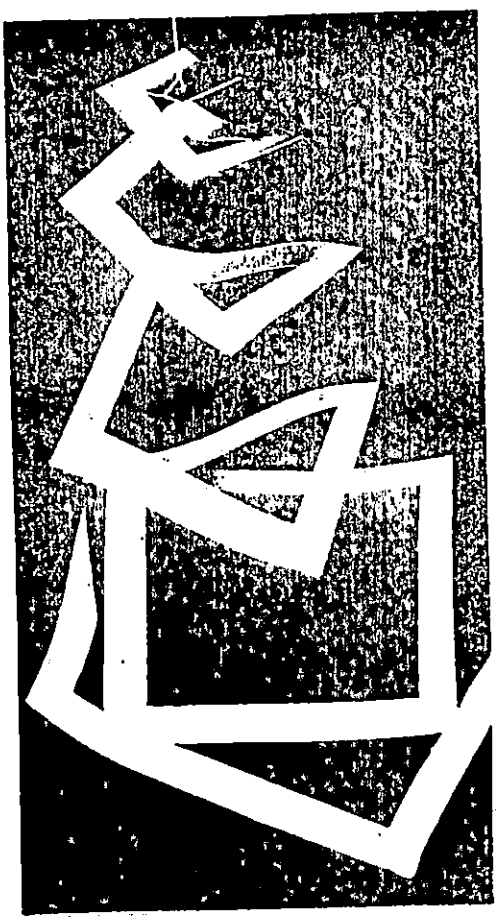
When cut in certain ways, paper can be stretched and expanded into new and different shapes. A circle folded and cut toward the center will fall into a fringed shape, varied according to the width of the strips and the weight of paper used. A shape cut by following the contour from the outside edge toward the center will automatically be extended into a long form (diagrams B and C). For the plan in diagram D, a square or rectangle is folded and cut alternately from opposite ends along the fold edge. In diagrams E, F, and G, a square, a rectangle, and a circle are shown, folded several times and cut on alternate lines from opposite edges.









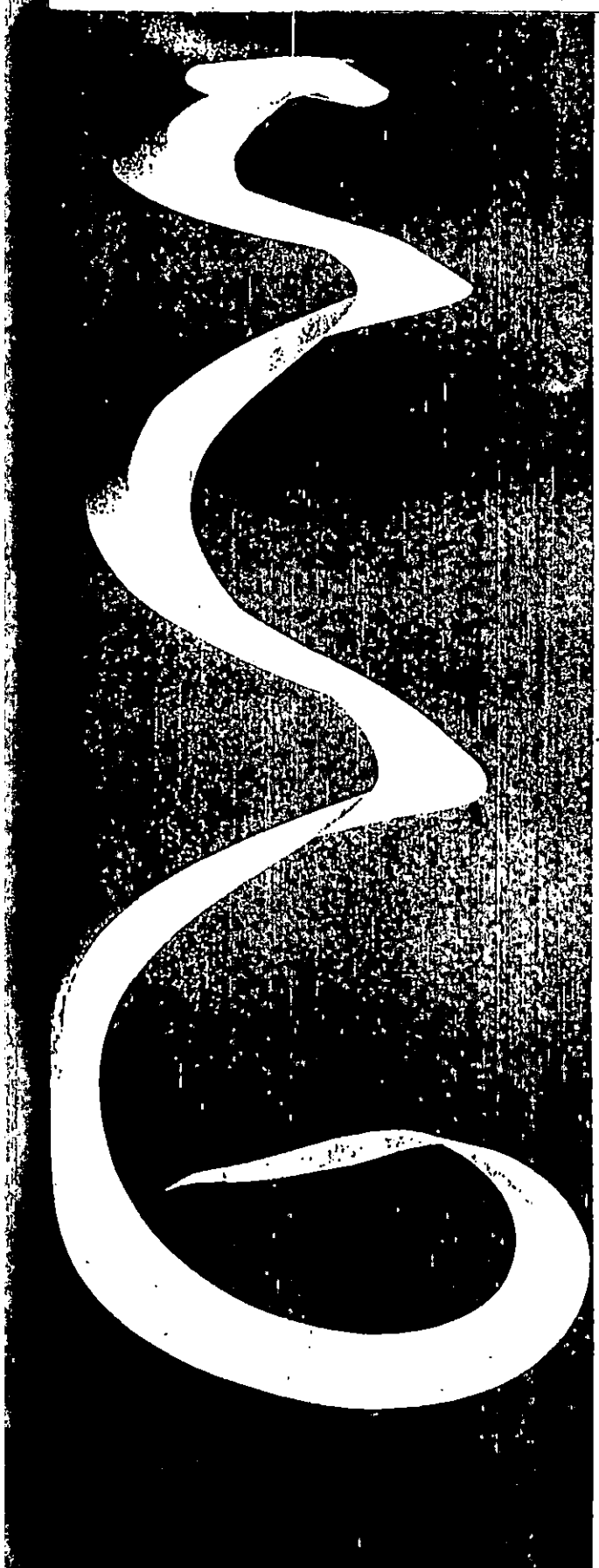


F

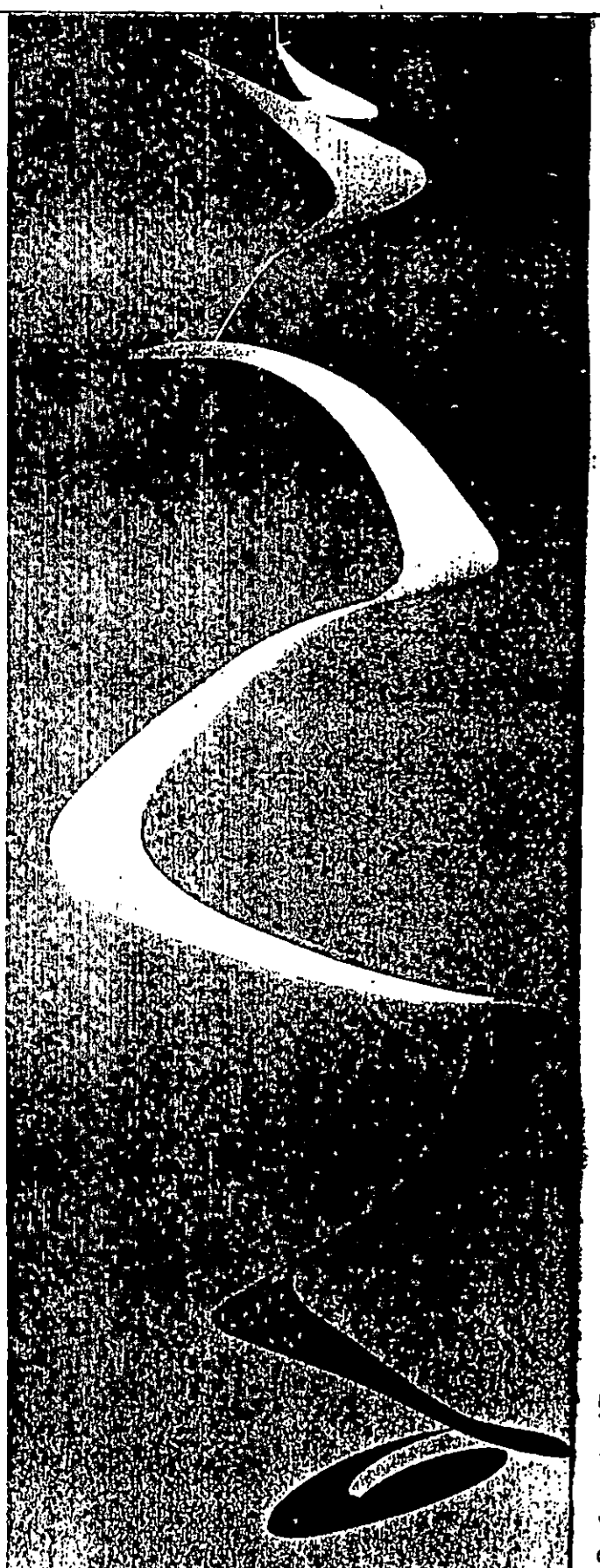
G

fold
fold

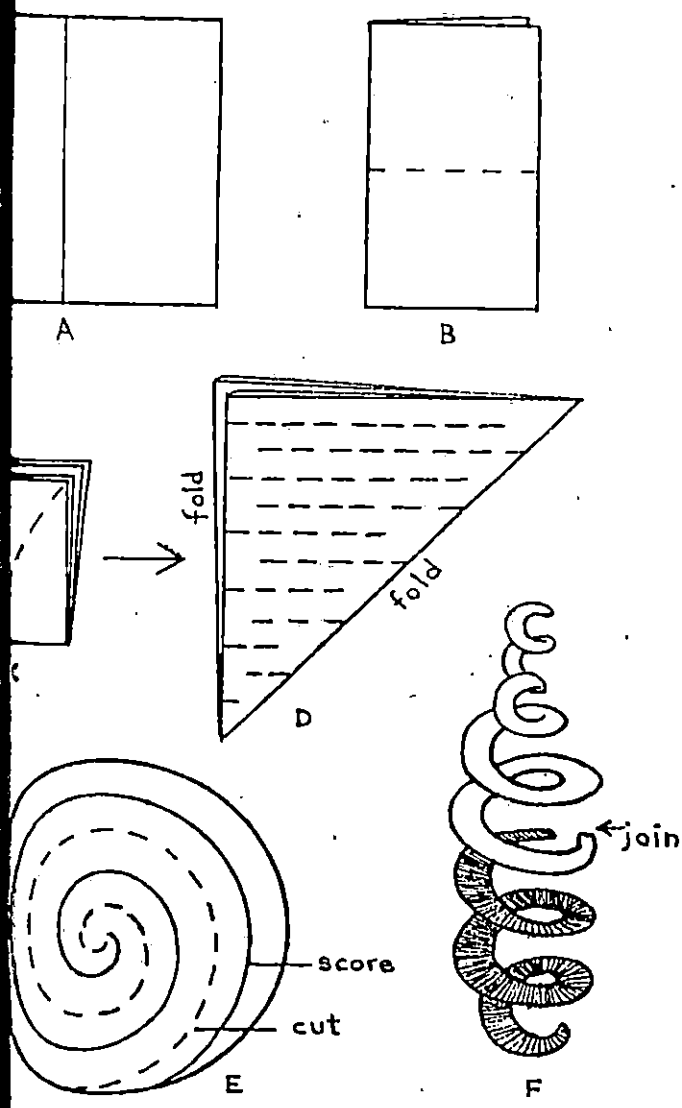
E



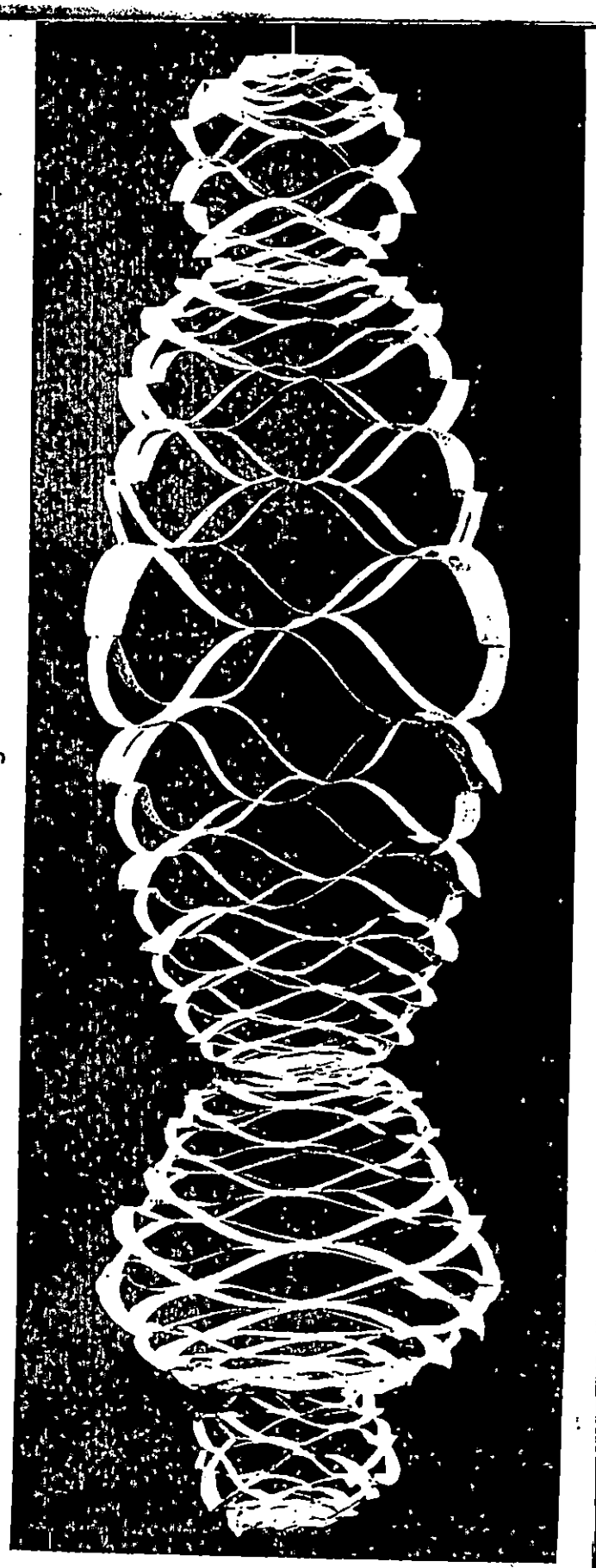
1



2



ating moving forms can be made from expanded
res like those on the facing page (diagrams E and
re). The circle in figure 1 is cut and scored down
nter of the strip (for scoring, see pages 46-48).
ucture in figure 2 is formed of two spiral-cut
joined at their widest ends (for cutting circles,
gram B, page 16). Several circles or squares can
ed to produce the structure at the right; for vari-
different sizes and colors. A plan for cutting the
is shown in diagrams A through D, above; for
ce, see diagram G, page 17. The centers can be
d to facilitate the joining of one part to another.
forms made from thin papers stretch out longer,
paper is more suitable for use at the top to pro-
ength and rigidity. Colored Christmas balls or
ms can be inserted within the structure.



3

litting an area into sections

e task: an area is to be cut up into several portions, and these are to be brought into a new rhythmically anced relationship.

e rules: these are determined by material, basic form, the number of cuts, the run of the cuts (straight curved, horizontal, vertical or diagonal), the retention of the original form or its transformation.

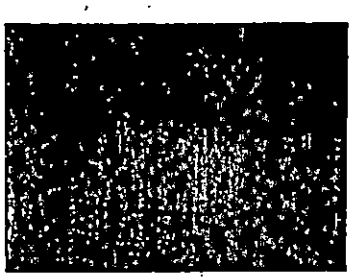
ere limitations will make good results all the more likely.

s advisable to use at first only black cardboard against a white background, to cut only in one direction, l to keep to straight or curved lines only. In later exercises, different shapes and lines can be used together.

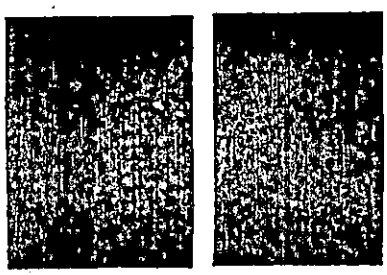
re is one basic rule for all exercises: Nothing must be added or taken away.

en a satisfactory solution has been found, the pieces are pasted down.

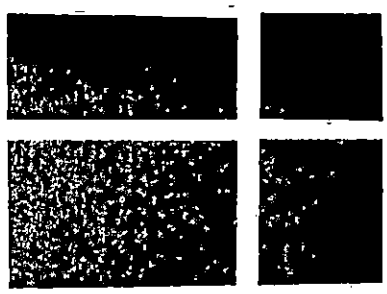
ures 1—3 show the simplest ways of splitting-up



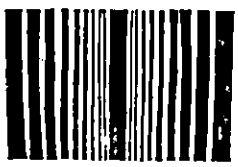
2



3



4 M 13



5 J 13

6 J 14

7 V

8 V

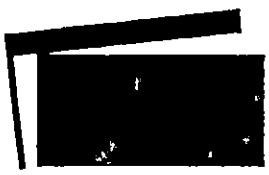
9 L

10 L

11 J 12

12 J 14

13 V



14 V

15 M 14

16 L

17 V

18 V

STARTING FROM THE RECTANGLE

Figures 4-18: a few ways of transforming a rectangle by splitting-up. Examples 4, 5 and 6 were produced according to the same rule, which allows only vertical division. The form of the rectangle had to be retained. The aims were:

Figure 4: a balanced rhythm of equal parts

Figure 5: movement, intensified towards the middle

Figure 6: movement in one direction

Figure 7: introducing movement through broken lines

Figure 8: establishing a balanced relationship through curved lines on both sides

Figure 9: splitting-up through horizontal and vertical cuts

Figure 10: division through one horizontal and several diagonal cuts

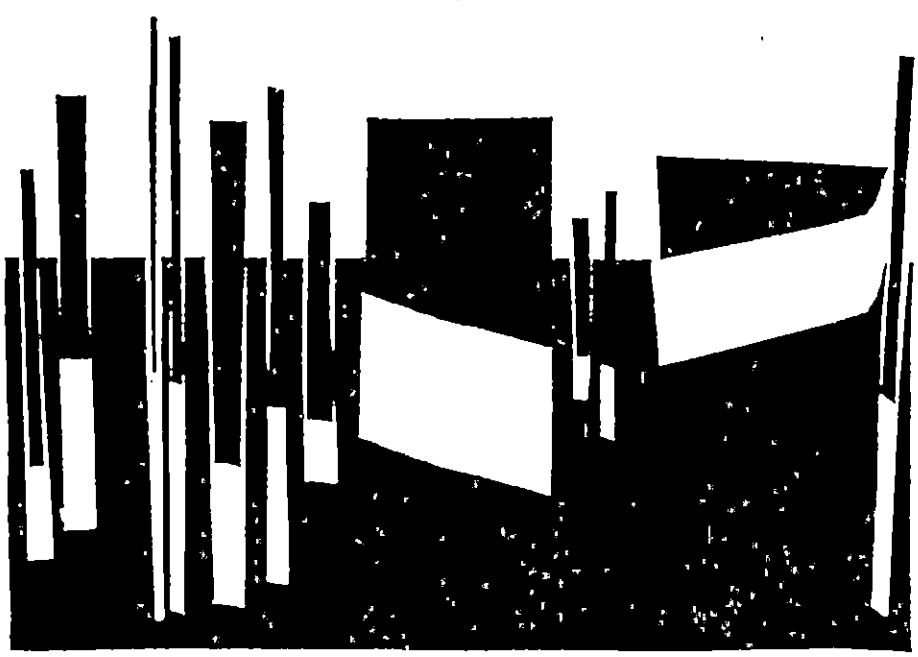
Figures 11-18: transformation of the area by cutting in different directions. The basic form has been changed. It should be borne in mind that these illustrations are on a greatly reduced scale. It is advisable to use a rectangle at least eight to twelve inches long for the first exercises

Figure 19: Division according to a rule demanding a build-up around three circular areas (the grain of wood, a whirlpool, etc.)

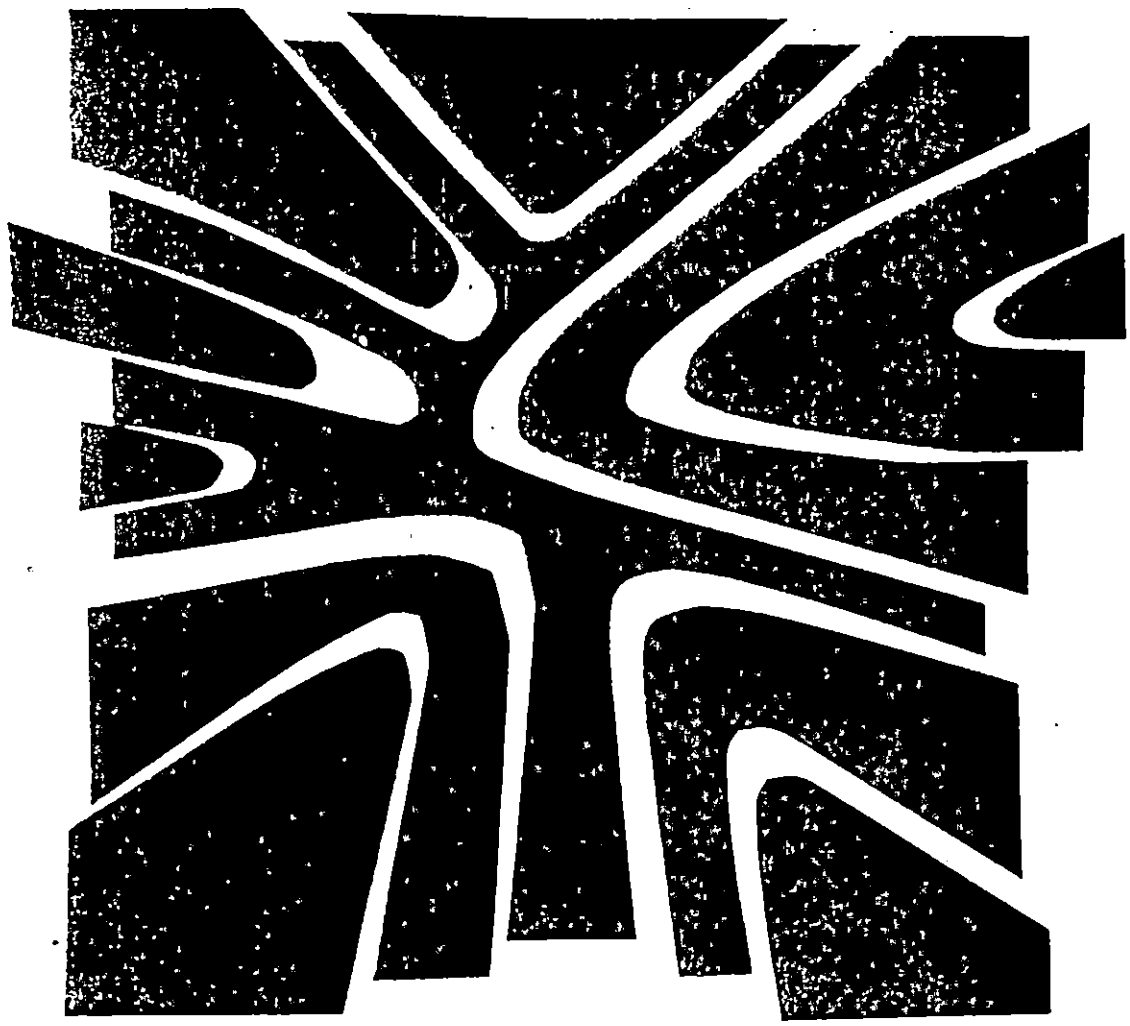
Figure 20: Division where the area could only be cut into on one side. The resultant shapes were to be moved out and brought into a harmonious relationship. (There is a strong pictorial effect, in contrast to the earlier examples)

Figure 21: this example is reproduced full-size. It shows particularly well how the technique of splitting-up can lead to textile or marquetry design. It is the work of a housewife

19 L

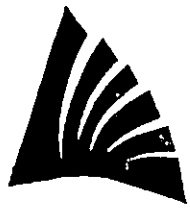


20 V



21 L

22 V



23 V

24 V

25 V

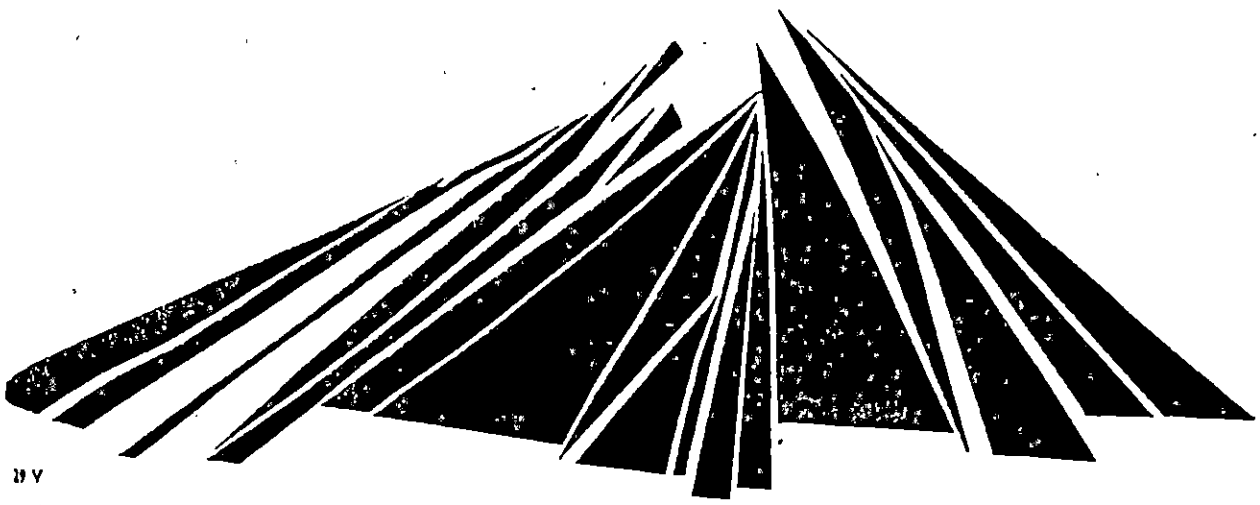
26 V

27 V

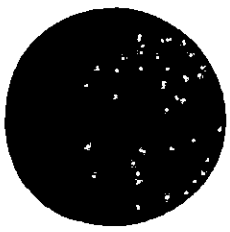
Figures 22-7: a sampling of the infinitely varied possibilities

Figure 28: it seems hardly possible that the basic form was an equilateral triangle

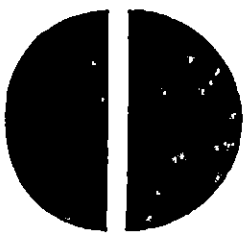
Figure 29: a striking three-dimensional effect



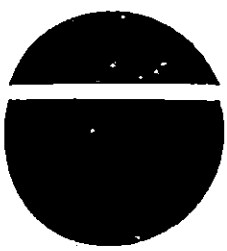
20 V



30



31



32

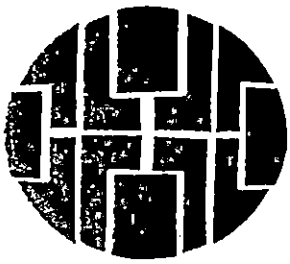
STARTING FROM THE CIRCLE

The form of the circle is full of promise. The examples show clear followed each time.

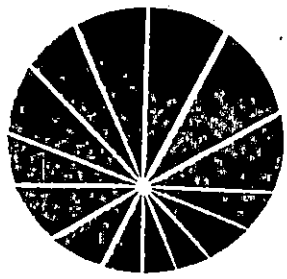
The following tasks have proved very rewarding in the class-roo At least ten circles of equal size are cut out from dark cardbo paper (about 4 ins. diam.). Each area is to be split up according rules, and re-arranged to form a related whole. Practised pupils c to do as many as fifty different schemes. The best solutions, sele basis of good proportion, are then repeated on a larger or sm according to the characteristics of the work. All the example page 17 have been developed from the circle, whose form can be making the pieces fit into each other

33

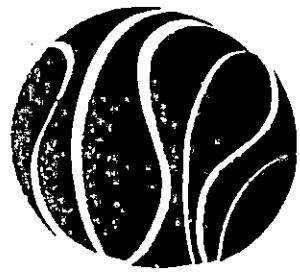
34



35 V



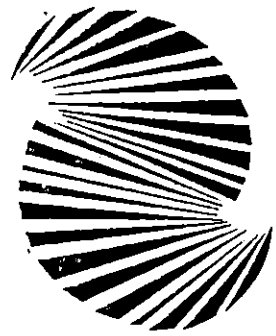
36 V



37 V

38 V

39 V



40 V

41 V

42 V

43 V

5 WAYS OF SPLITTING UP

A mask has to be developed out of a basic form (square, circle, oval, triangle . . .) by cutting the latt ner determined by the rules of the game. The resultant parts are to be arranged until a certain ex been achieved. These experiments are particularly thrilling for children, since the smallest chan duce quite a different expression.

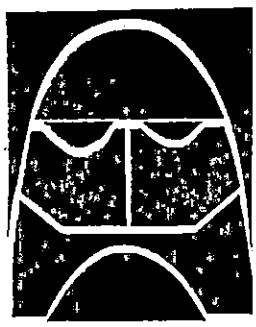
Here, too, the basic rule is most important: never add or take away.

Natural forms can be used as well as geometric ones, as in figures 50-2, which are based on the outl Plant forms, too, are eminently suitable (leaves, buds, blossoms, trees, etc.).

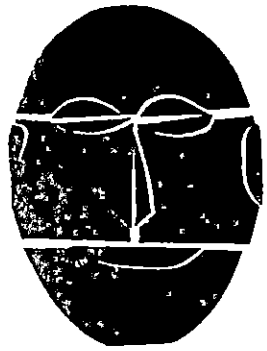
In figures 54-6 and 62 the paper has been torn instead of cut. It can be seen that the line achieve is more suitable for natural forms than a straight cut.

Differently coloured papers can also be used. Example: two pieces of paper of equal size, and of the shape, are placed on top of each other and cut up together. This will produce two differently colc of new shape. These can be transposed, or arranged in layers of different colours. After a few repeate papers of several colours, or even patterned papers, can be used.

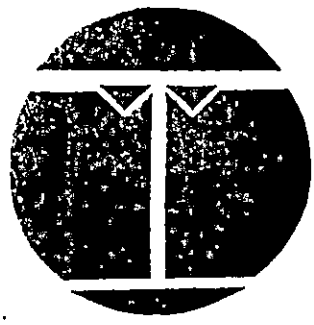
44 V



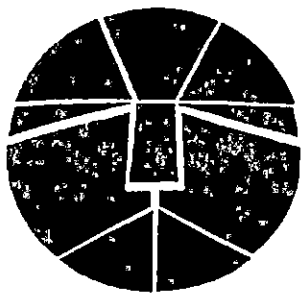
45 V



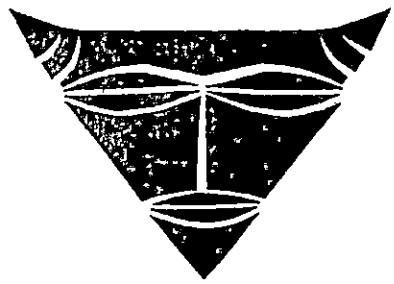
46 L



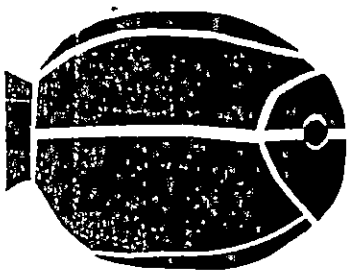
47 V



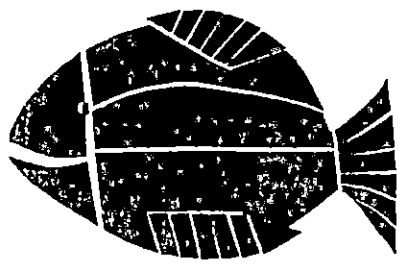
48 V



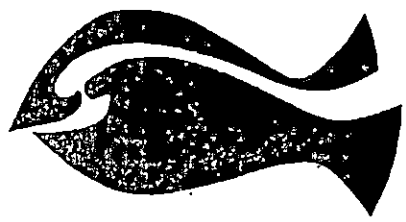
49 V



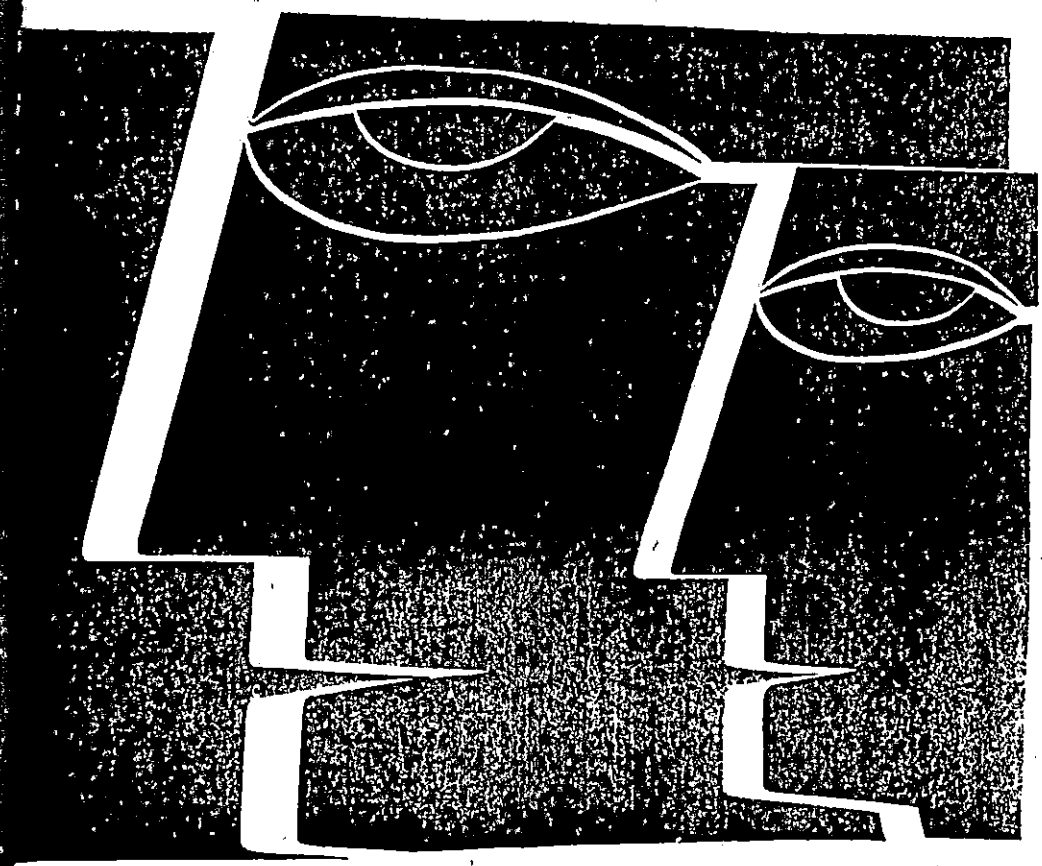
50 J 12



51 L



52 V



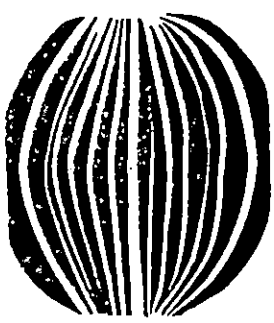
53 V

impressive poster-like effect, illustrating the suitability of this technique for poster design (gı
ted in scale).

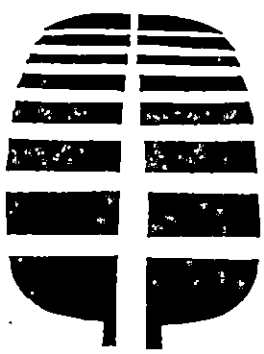
54 V

55 V

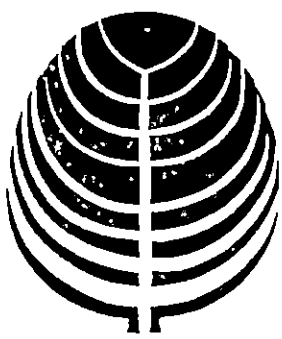
56 V



57 M 12



58 V



59 V

60 J 12

61 L

62 V

BAHAN BACAAN

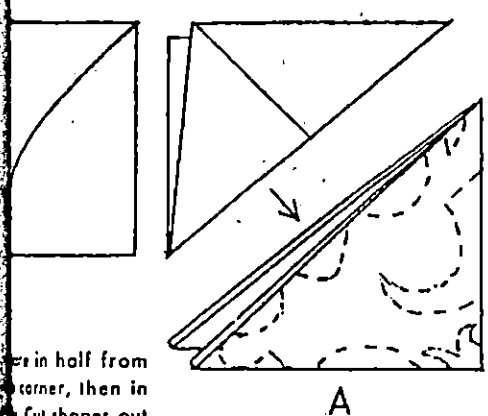
POKOK BAHASAN 5

1. Pauline Johnson, Creating With Paper, Basic Forms and Variation, University of Washington Pres,1958 hal.25-33

CUTOUTS

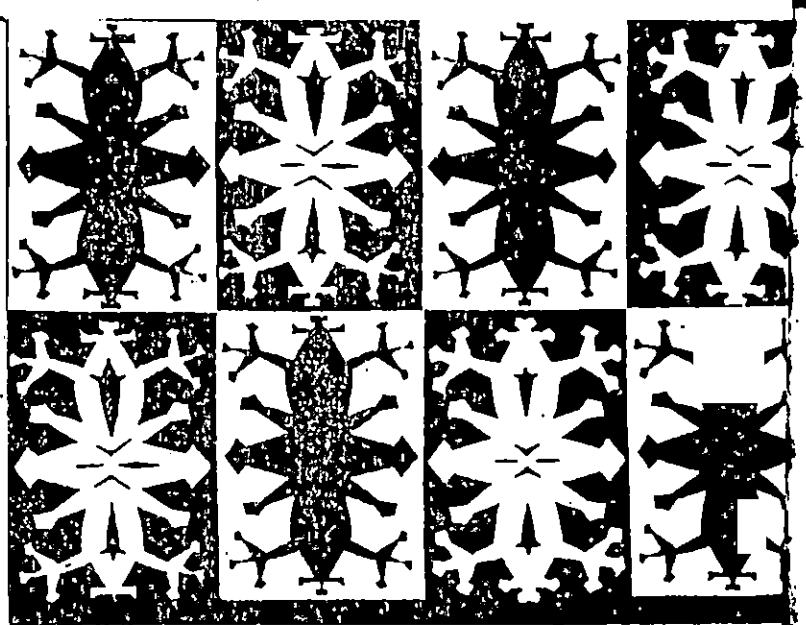
The folded paper technique, which always produces symmetrical shapes, is shown in squares, rectangles, and circles that have been folded alternately lengthwise and across for cutting. The resulting cutout openings make for dramatic contrasts of values, with larger and smaller intervals occurring in the rhythmic pattern. Interest is produced through varying the contours and sizes of the shapes. The dark areas made by cutting away the paper and the light ones that remain are equal in interest and balance and complement each other, creating positive-negative shape relationships. An example is shown in figure 2, where the positive shapes have been removed from the center of the cut and the negative shapes retained as part of the structure of the design. Some of the cutouts shown are traditional snowflake forms, which gain strength through their repetitive cuts.

1

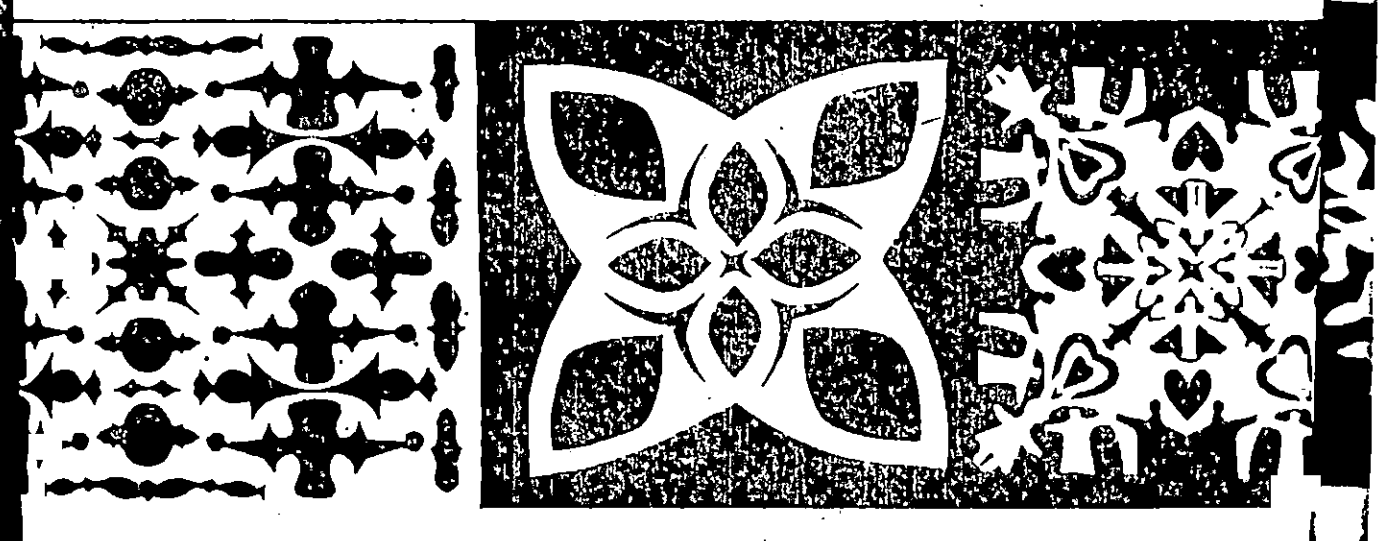


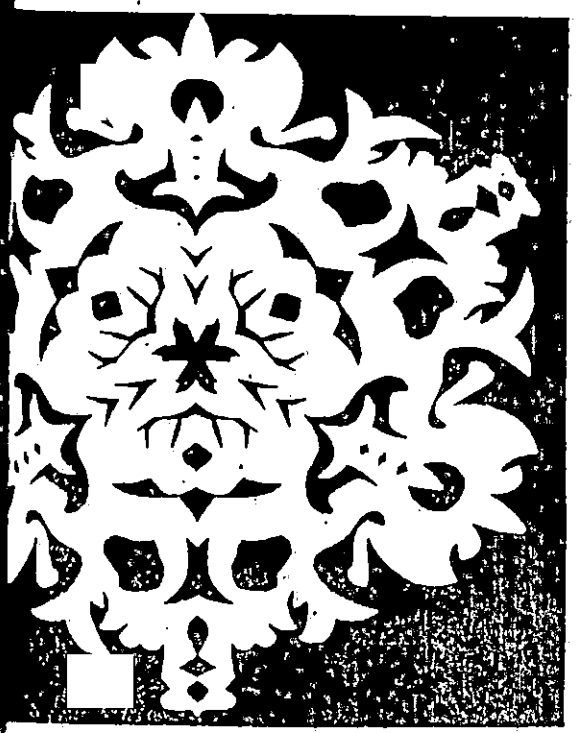
A

...e in half from ...corner, then in ... Cut shapes out ...de.

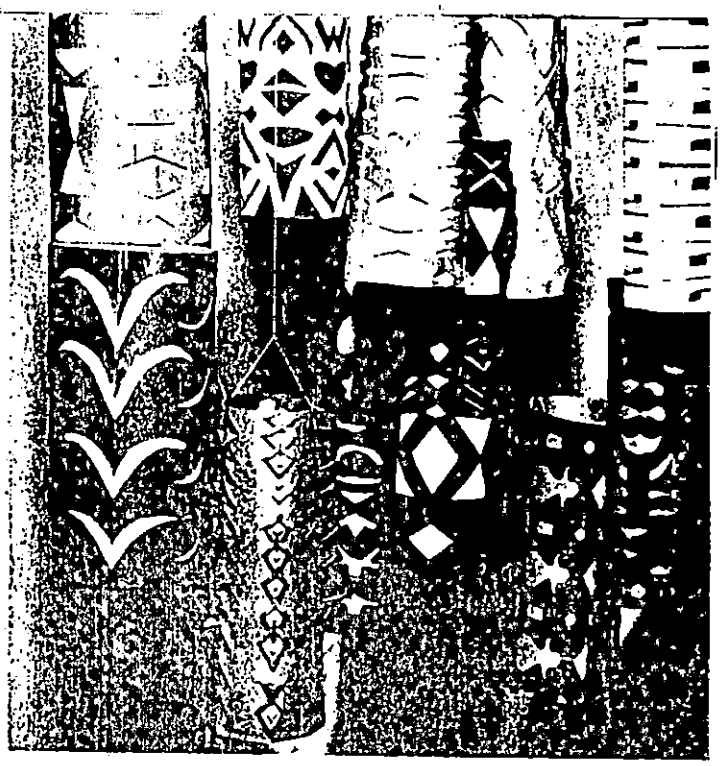


2





4



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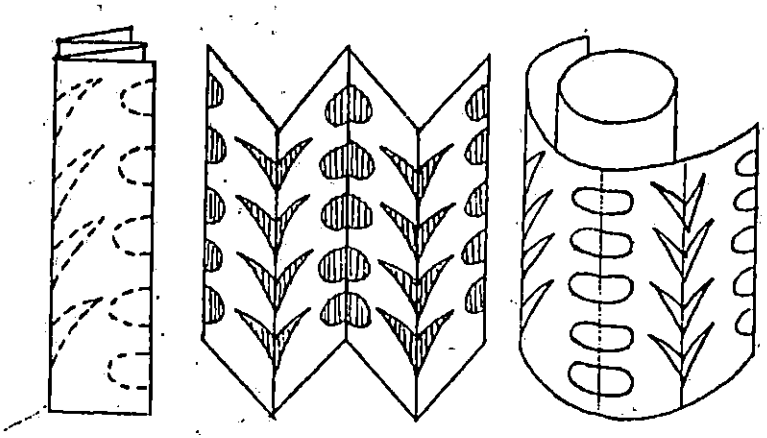
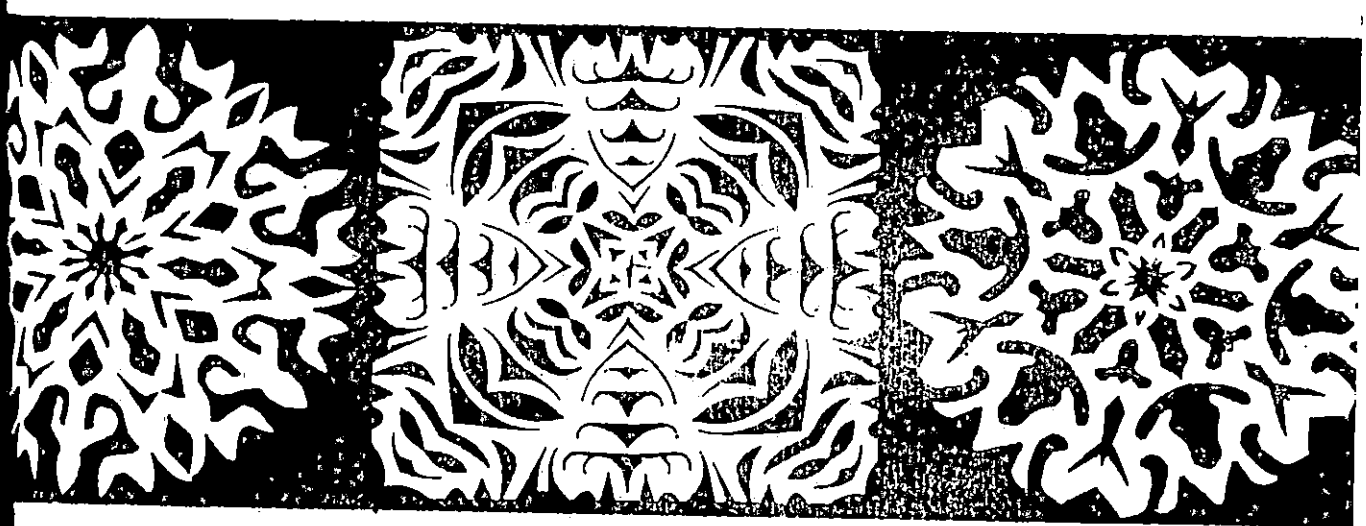
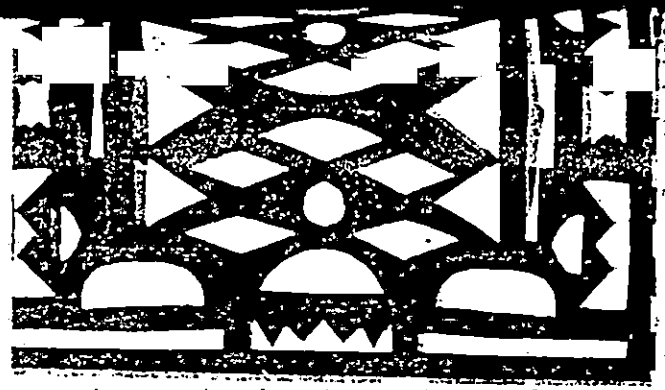
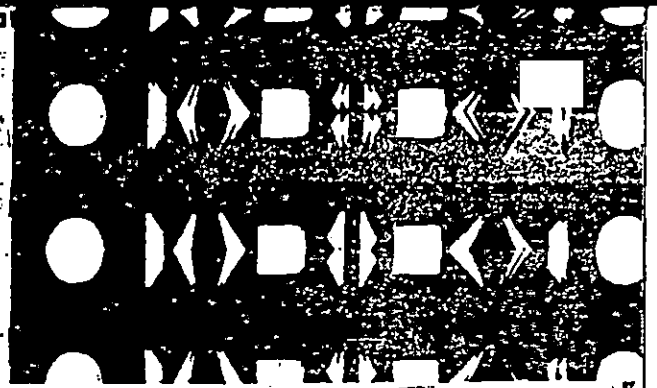
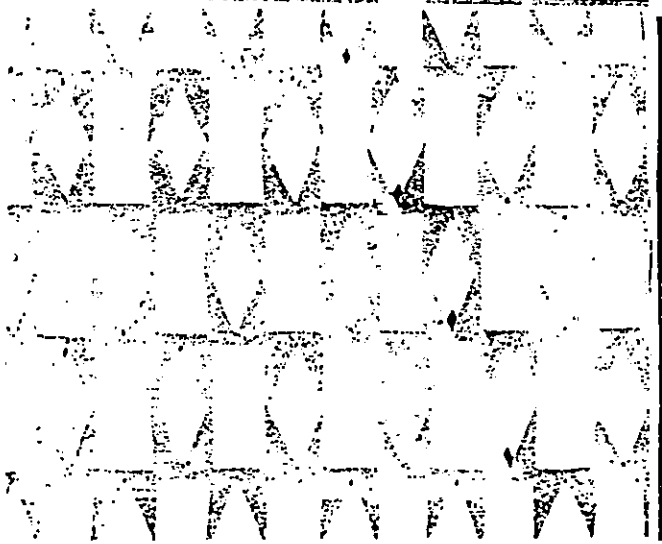
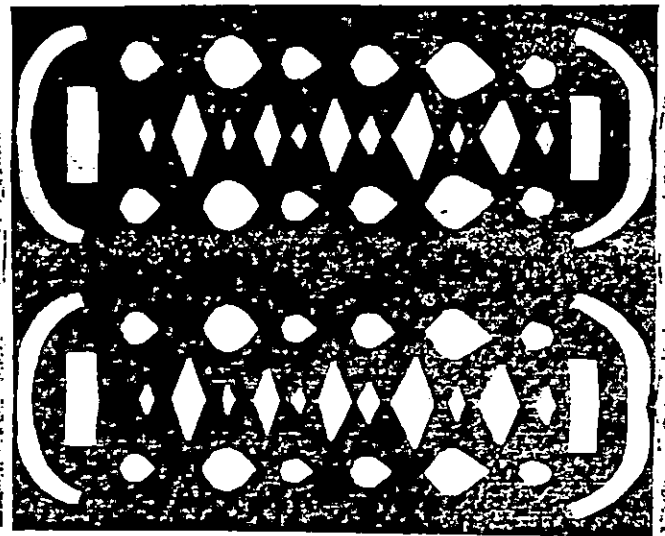
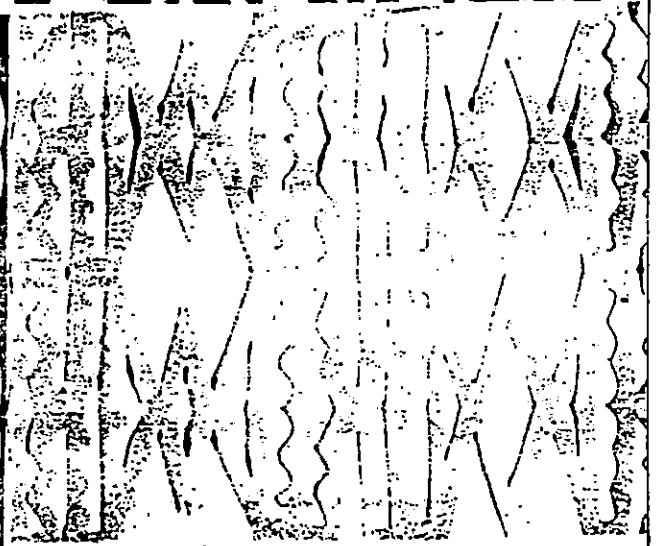
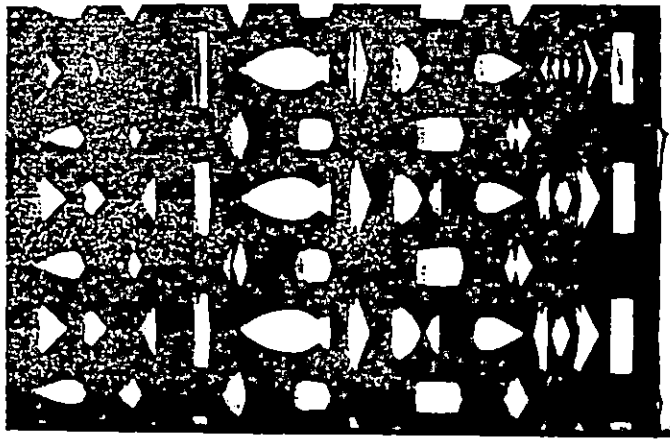
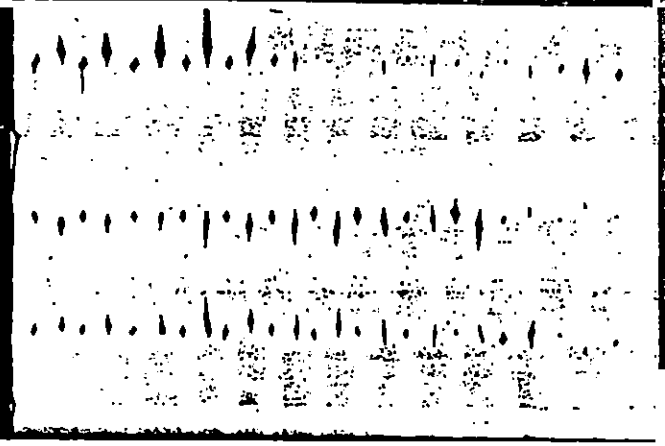
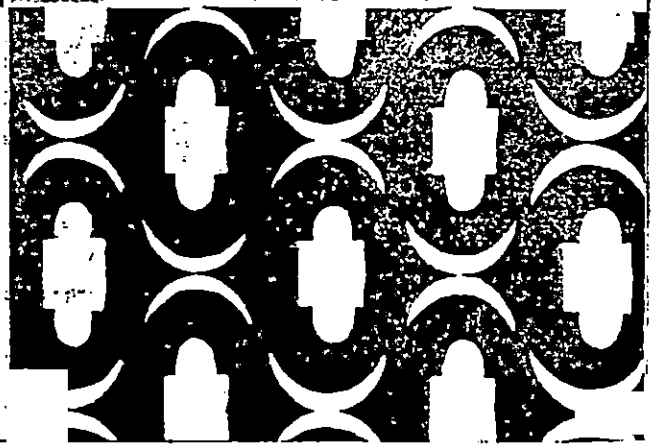
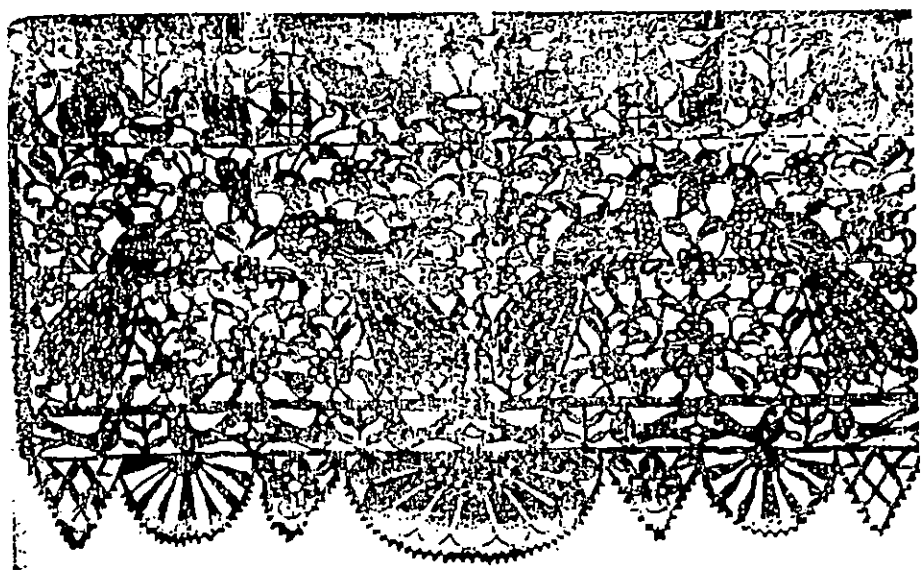


B

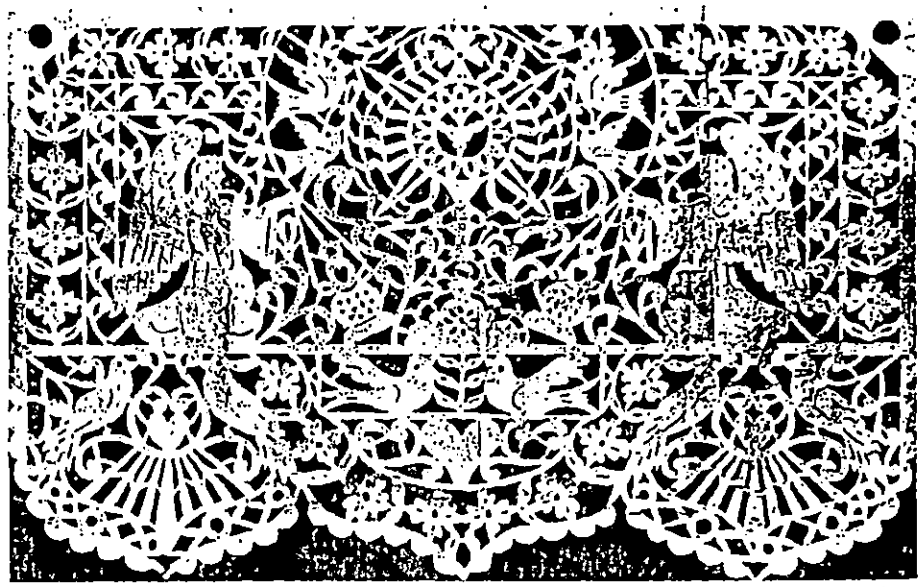




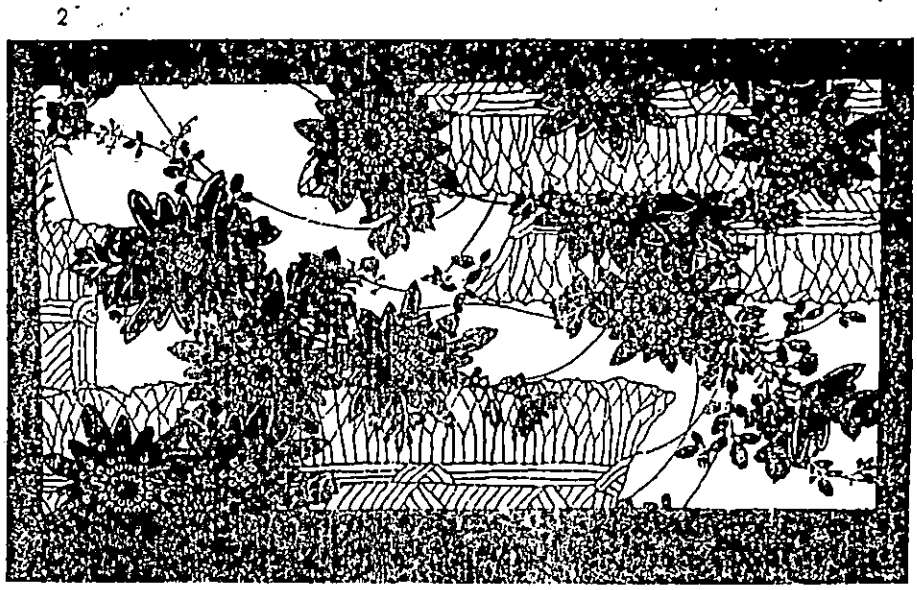










1



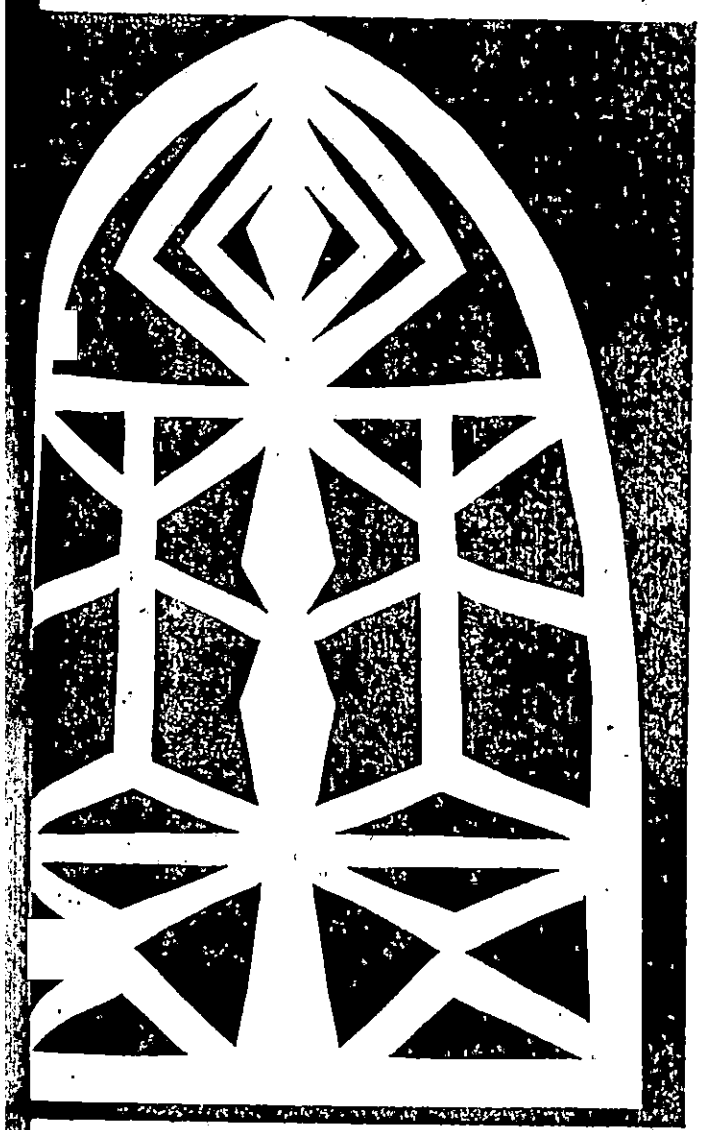
2



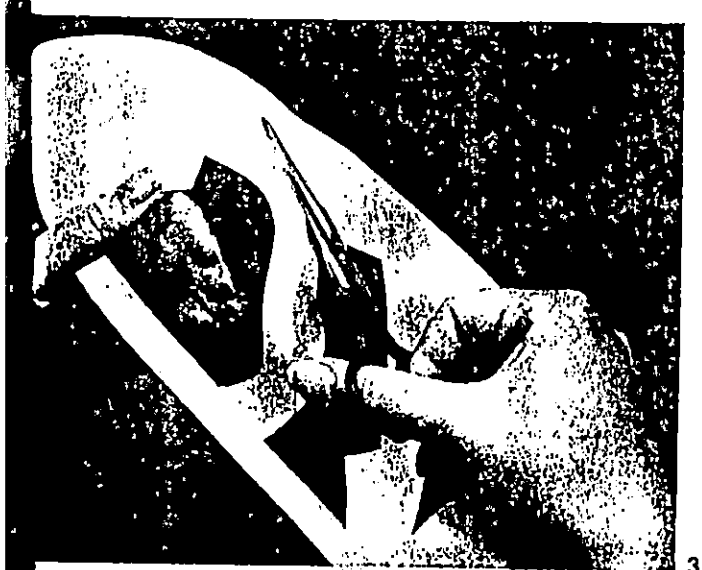
3

paper cuttings on this page are
resentative of the folk art of
countries. Figures 1 and 2 are
ican festival decorations cut
thin colored tissue papers.
Japanese stencil of rather tough
er in figure 3 is used for pro-
ng prints, but it has qualities
ing it beautiful as paper art
dless of the purpose it serves.
culouts on the facing page are
from lightweight colored
rs folded according to the
ions in diagram B on page 27.

WINDOW CUTOUTS

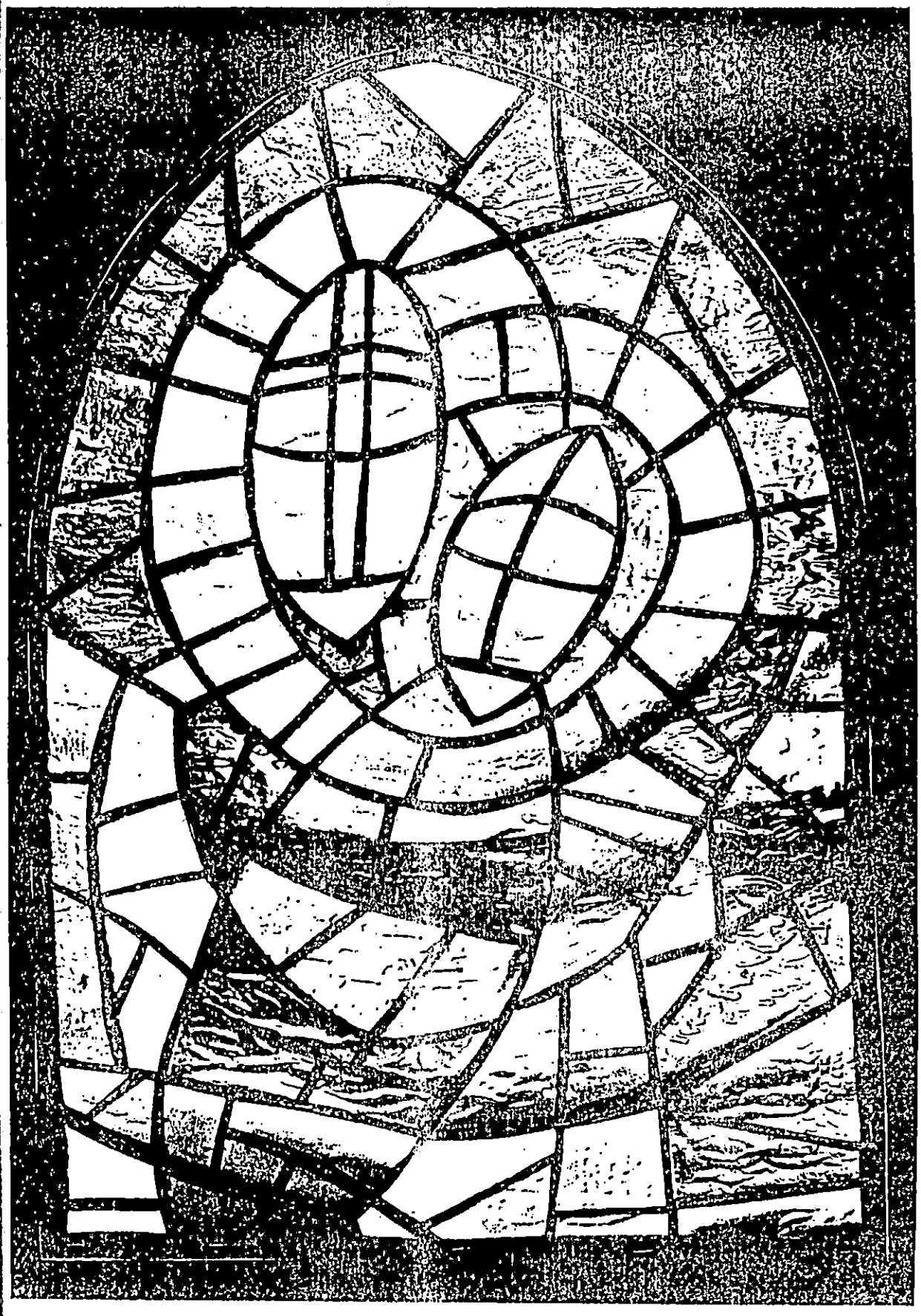


2



3

Symmetrical window cutouts are made from a folded sheet of paper with a rounded arc cut at the top. Inserts are removed with small, sharp scissors (figure 3). A solid border and part of the center fold should be retained. Figures 1 and 2 emphasize the line pattern; figures 3 and 4 (page 32) employ more solid area. The mantel decoration (page 31) is cut with a sharp knife from black paper and mounted on cardboard, with colored metallic papers inserted into the openings. In the richly imaginative composition on page 33, each area is removed with a sharp blade from an unfolded sheet of white construction paper, resulting in a rhythmical structural design.

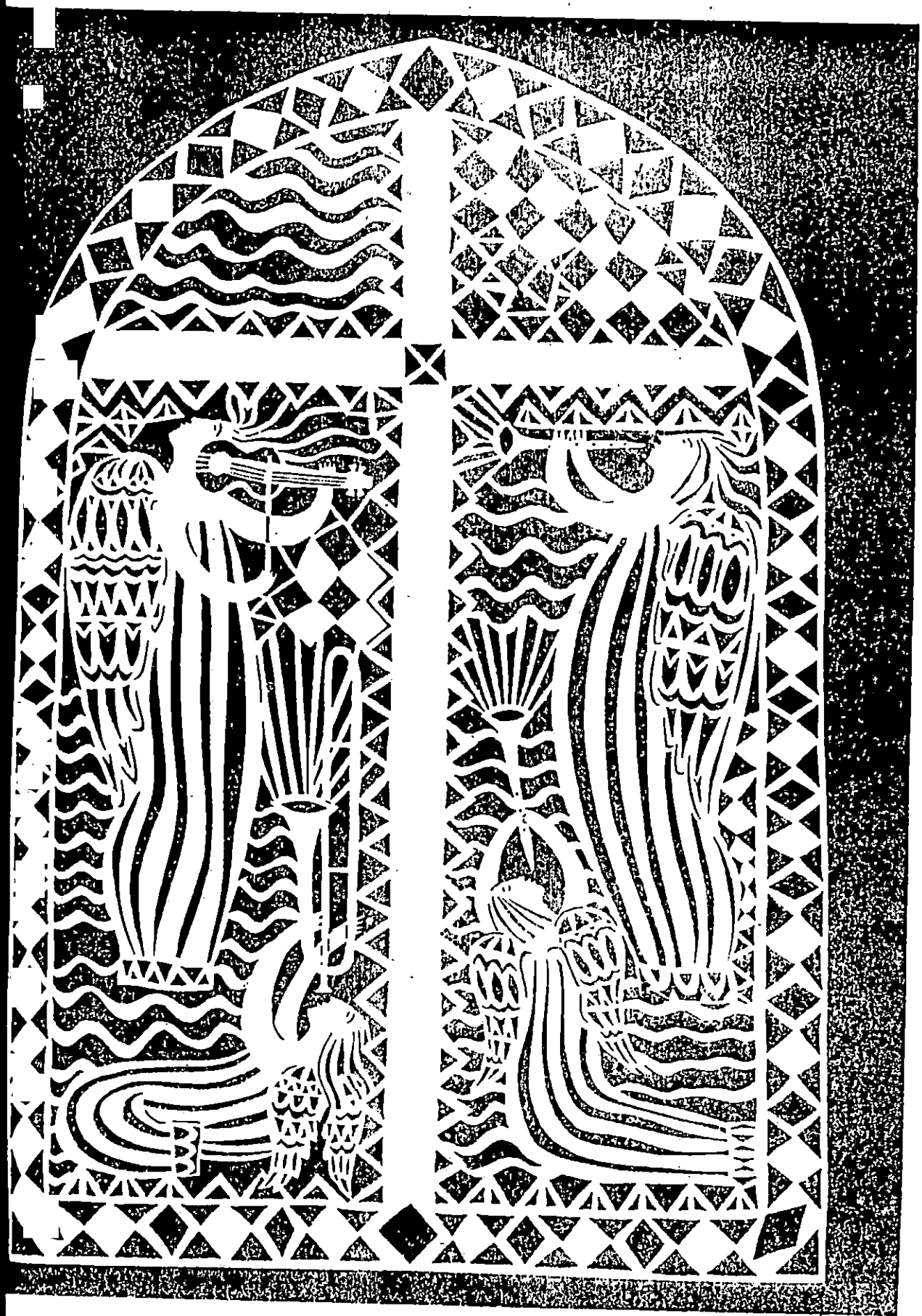


1

2

3

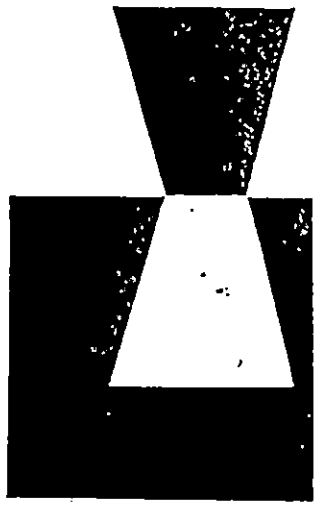
4



BAHAN BACAAN

POKOK BAHASAN 6

1. Ernst Rottger, Creative Paper Design, Reinhold Book Corpration, New York Amsterdam, 1969, hal.22-27



tting out and folding back

following exercises require paper that is black on both sides.

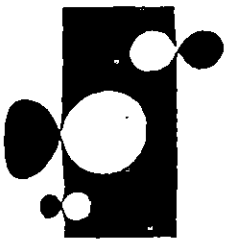
re 63 shows how to proceed.

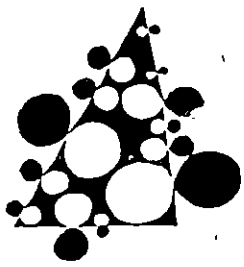
rules determine the basic form, the shape of the areas to be cut out, their size and number, and the
aterial (colour and type of paper).

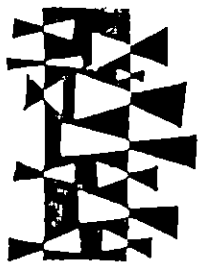
e, too, it is advisable to start with black and white paper. Only simple forms are cut out and folded t
When the pupil has gained some experience, he can gradually be allowed more freedom. He ca
ther kinds of paper (with a different colour on each side, or, perhaps, with patterns) and a greater v
apes, not necessarily of the same size. But choice and arrangement of forms and colours will continu
rned by certain rules (contrast, patterns of movement, etc.).

res 64-80 merely hint at a wealth of possibilities.

Basic rule: nothing must be taken away or added.





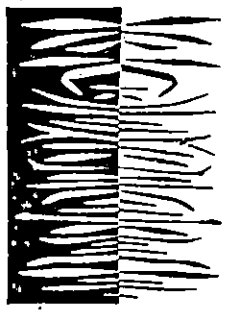


64 V

65 V

66 V

67 V

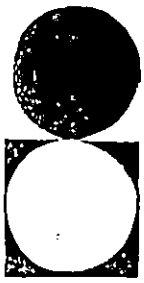


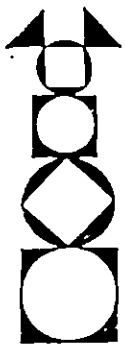
68 V

69 V

70 V

71 J 14



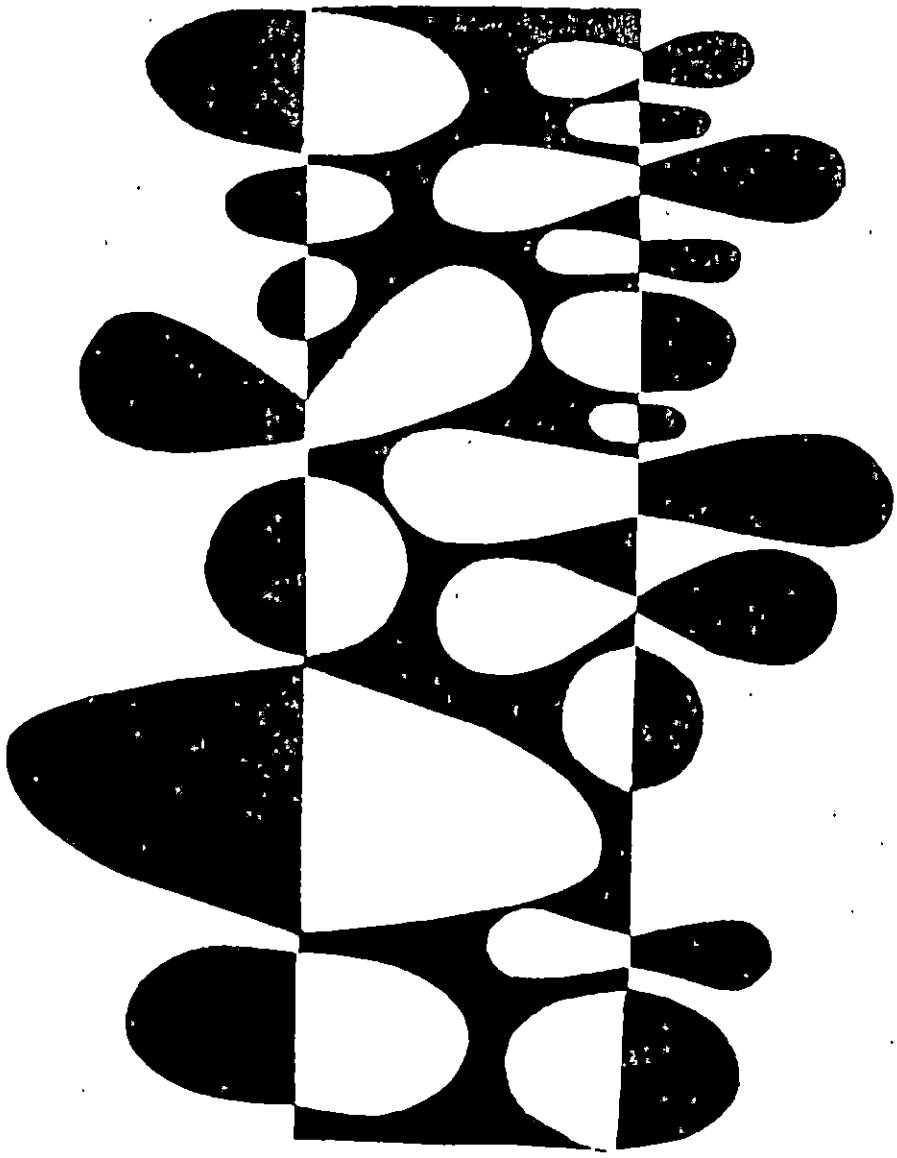


72 V

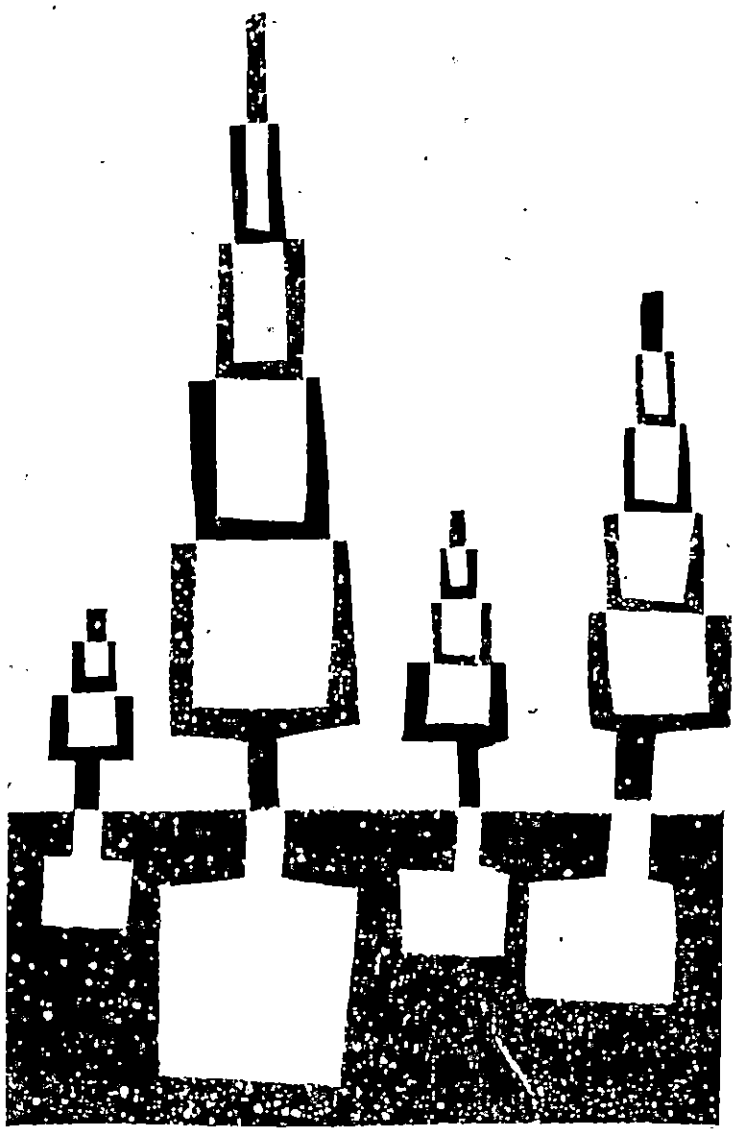
73 V

74 V

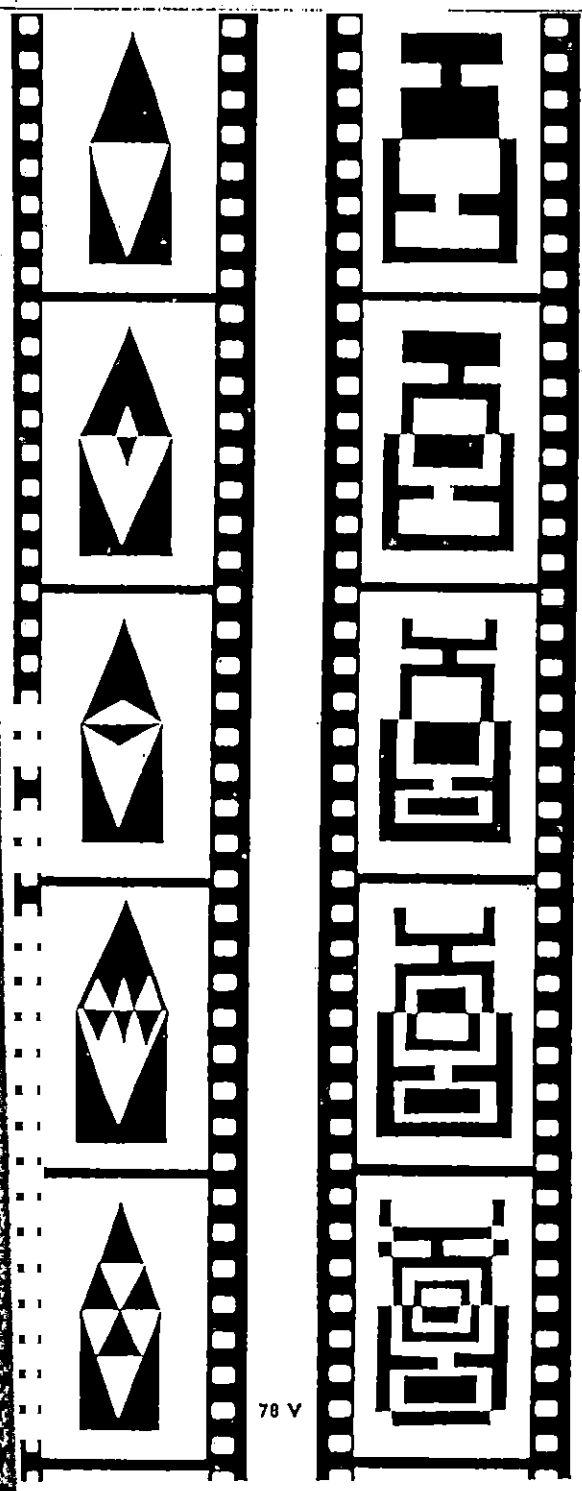
75 V



76 V



77 V



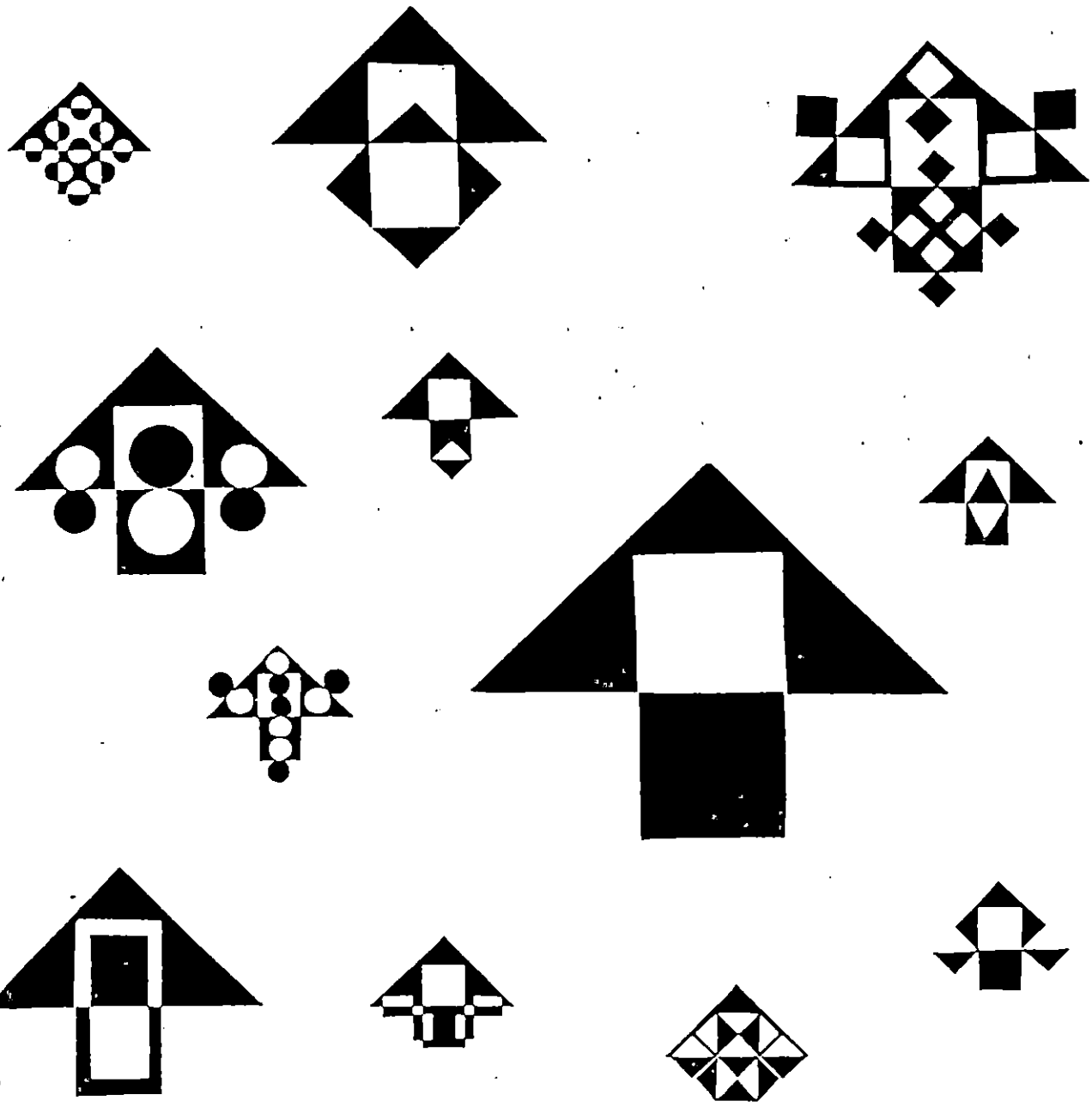
78 V

79 V

Figures 78-9 show the different phases of a ga
which demand the development of certain form
can be particularly fruitful. There is but one s
here to the slow motion picture.

A young student — who had been trained in S
showed a film he had made of experiments of
It was supported by sound effects, which bro
process of opening out and folding back very
life. The film could not have impressed the audie
if it had been a series of slow-motion pictures of f
processes in nature and one suddenly realised h
a game of this kind comes to recapturing natu
morphosis and decline.

Figure 80: variations on the triangle

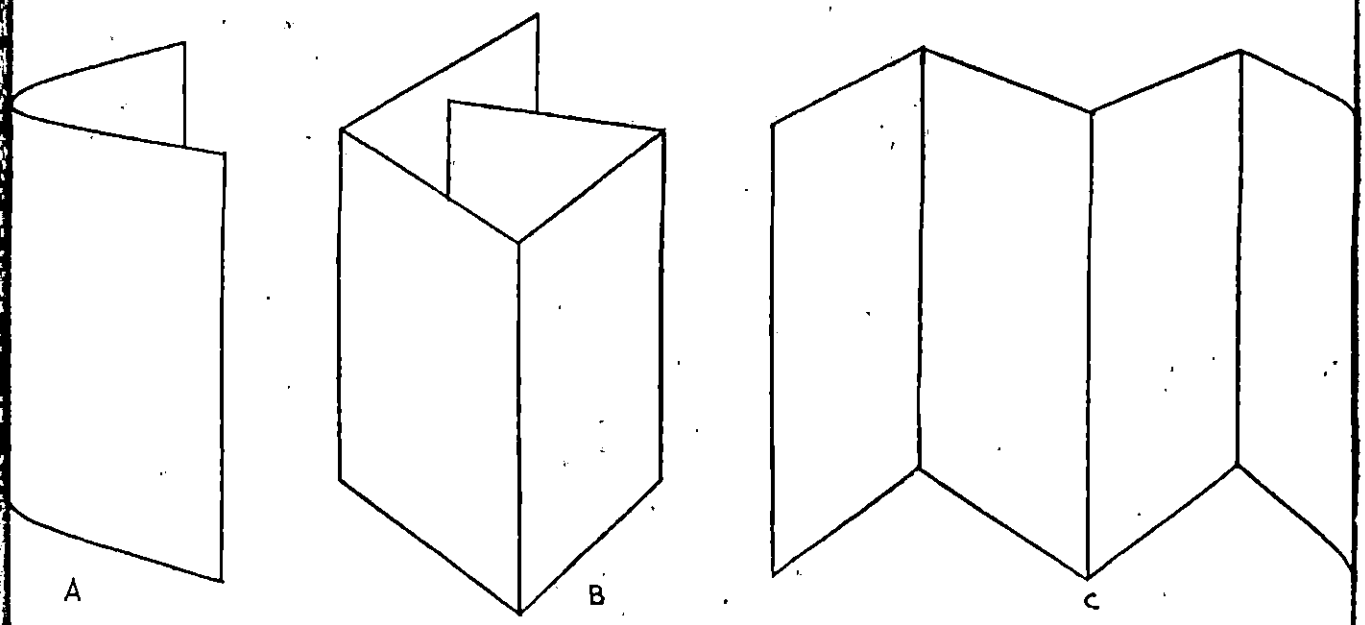


BAHAN BACAAN

POKOK BAHASAN 7

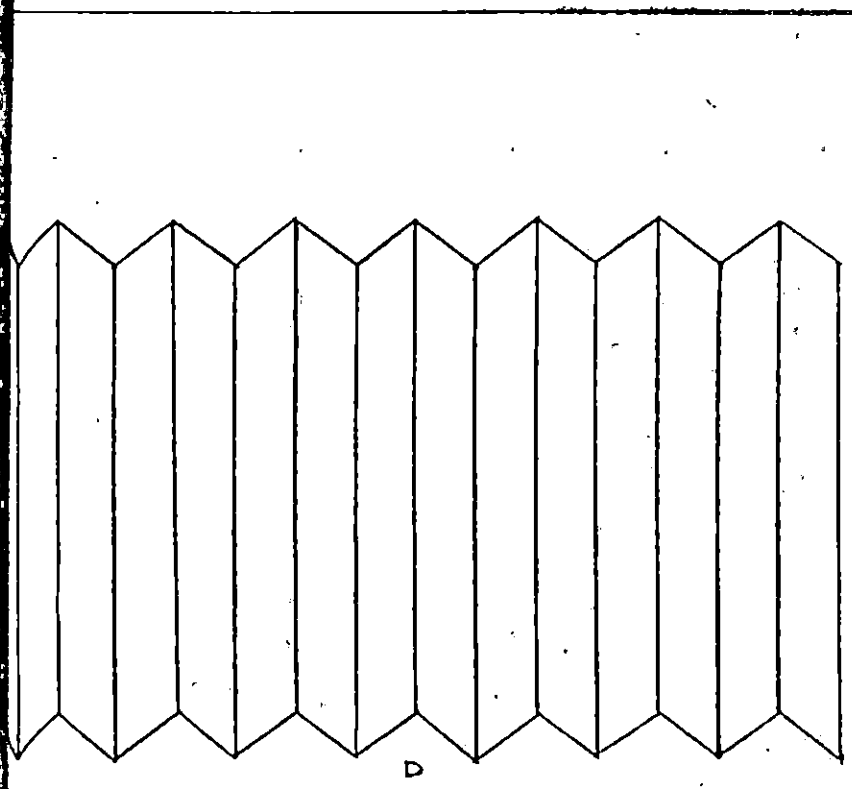
1. Pauline Johnson, Creative With Paper, Basic Form and Variation, University of Washington Press, 1958, hal 42-65

FOLDING



1

Folding translates paper into simple and exciting abstract three-dimensional formations that are basic to a great many constructions. Lightweight papers can be creased easily by hand without scoring. Papers with a pronounced grain fold more easily in one direction than in another. When folding paper it is helpful to crease it well with the thumbnail or the edge of a ruler. For accordion pleats, the paper is folded in half a number of times as in figure 1 on page 50. The result is a pleasing columnar structure (figure 1 at left) with creases that can be refolded back and forth to produce pleats like those in figure 3 or, spread out, as in diagram D. An application of this form is seen in the functional beauty of the fan. Folds like those in diagrams C and D are effective as backgrounds in showcases or with bulletin board arrangements.



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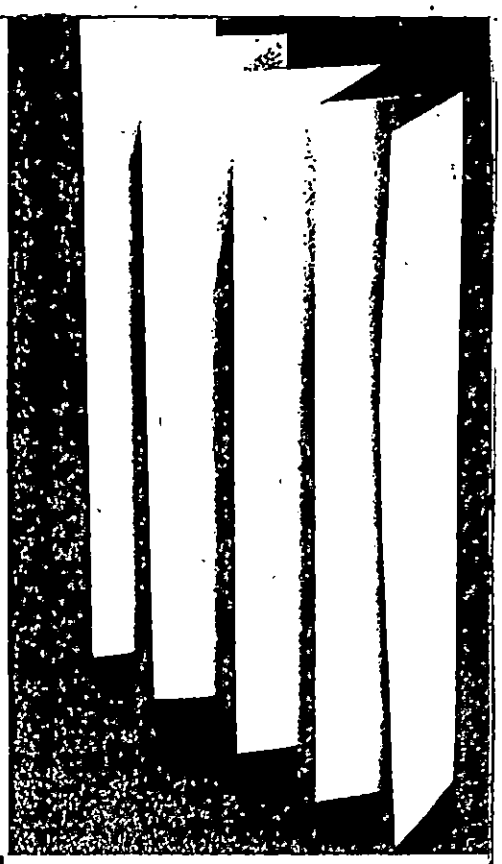

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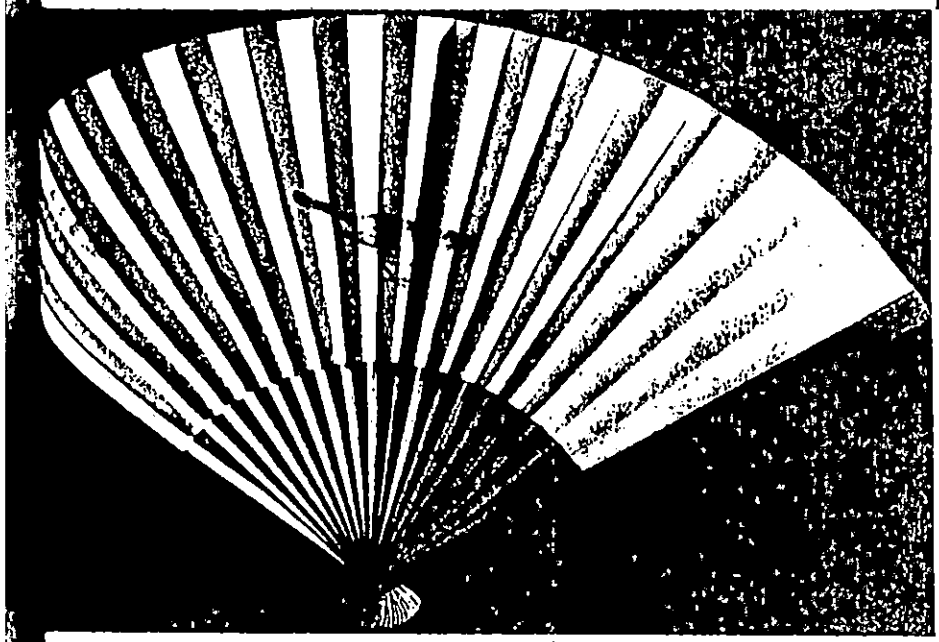

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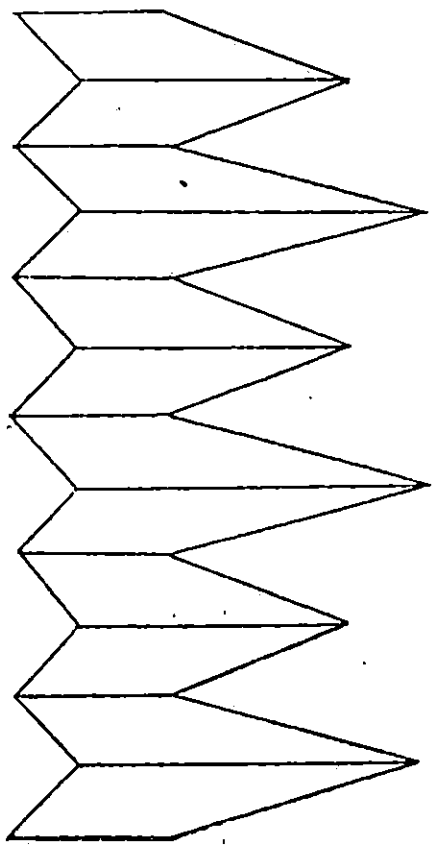

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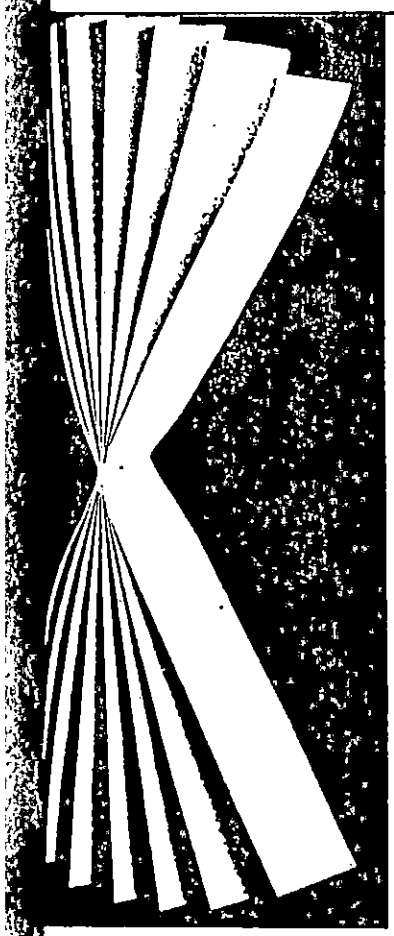
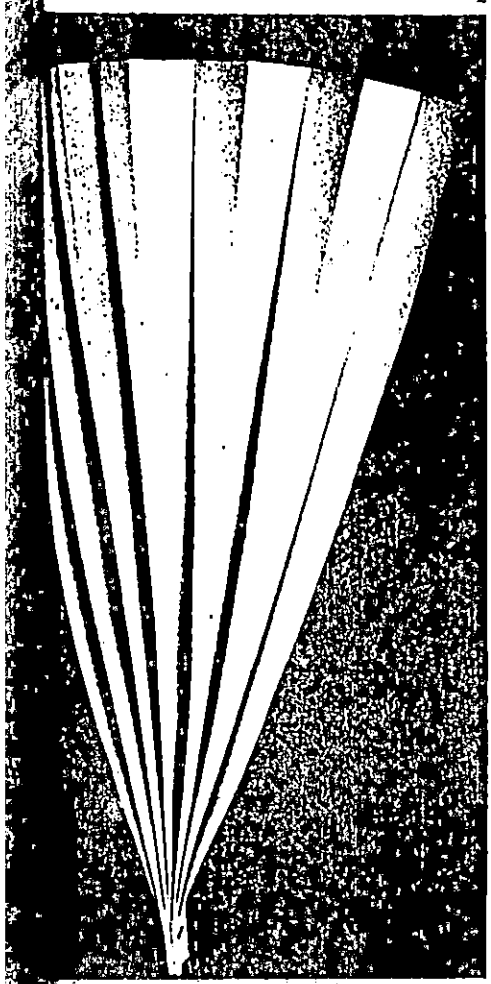


1

The structures here are a continuation of the approach presented on the previous page, with simple folded pleats appearing in different positions. Their beautiful abstract qualities are emphasized by the effects of light upon the sloping surfaces. The form on the facing page has strength as well as eye appeal and is capable of supporting considerable weight. It is rounded into a volume from a pleated rectangle, the edges being secured together with tape. A pleated piece of paper can inspire many experiments and should be explored for possible arrangements. Staples can be used to hold the form in the desired position. Shapes of this nature may suggest angel or bird wings. They can be used in combination with other forms as in the figure structures on pages 122 and 123.

2



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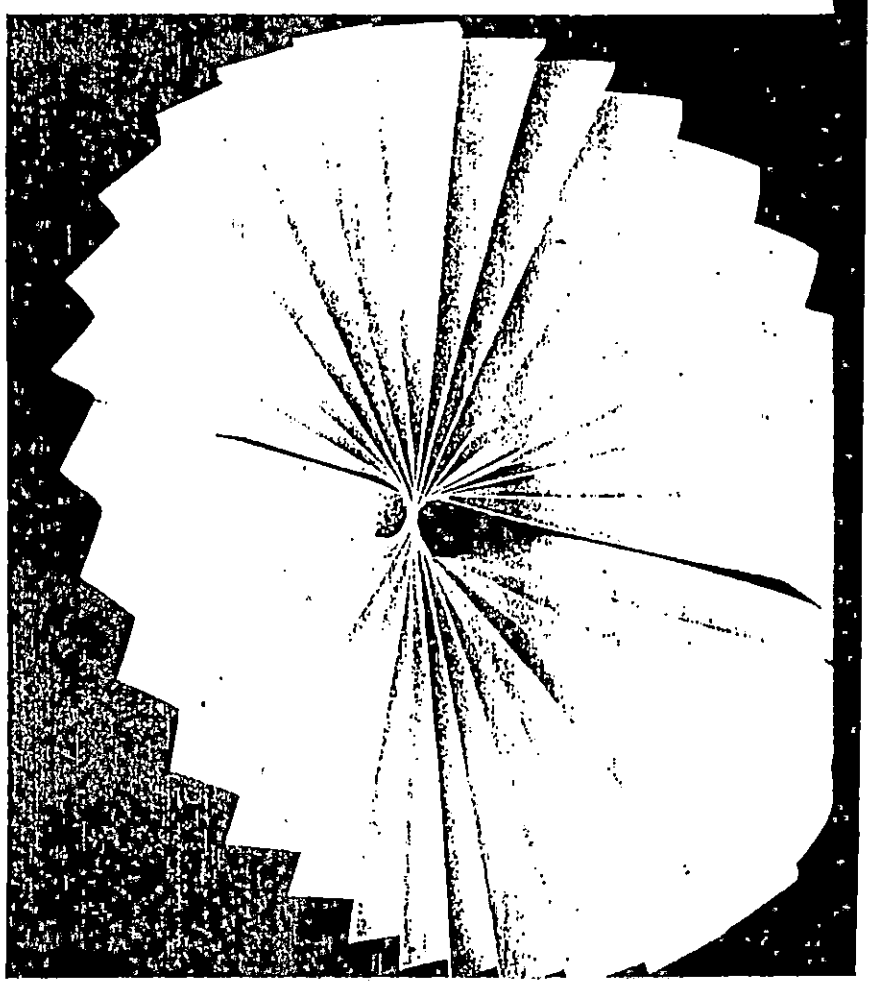
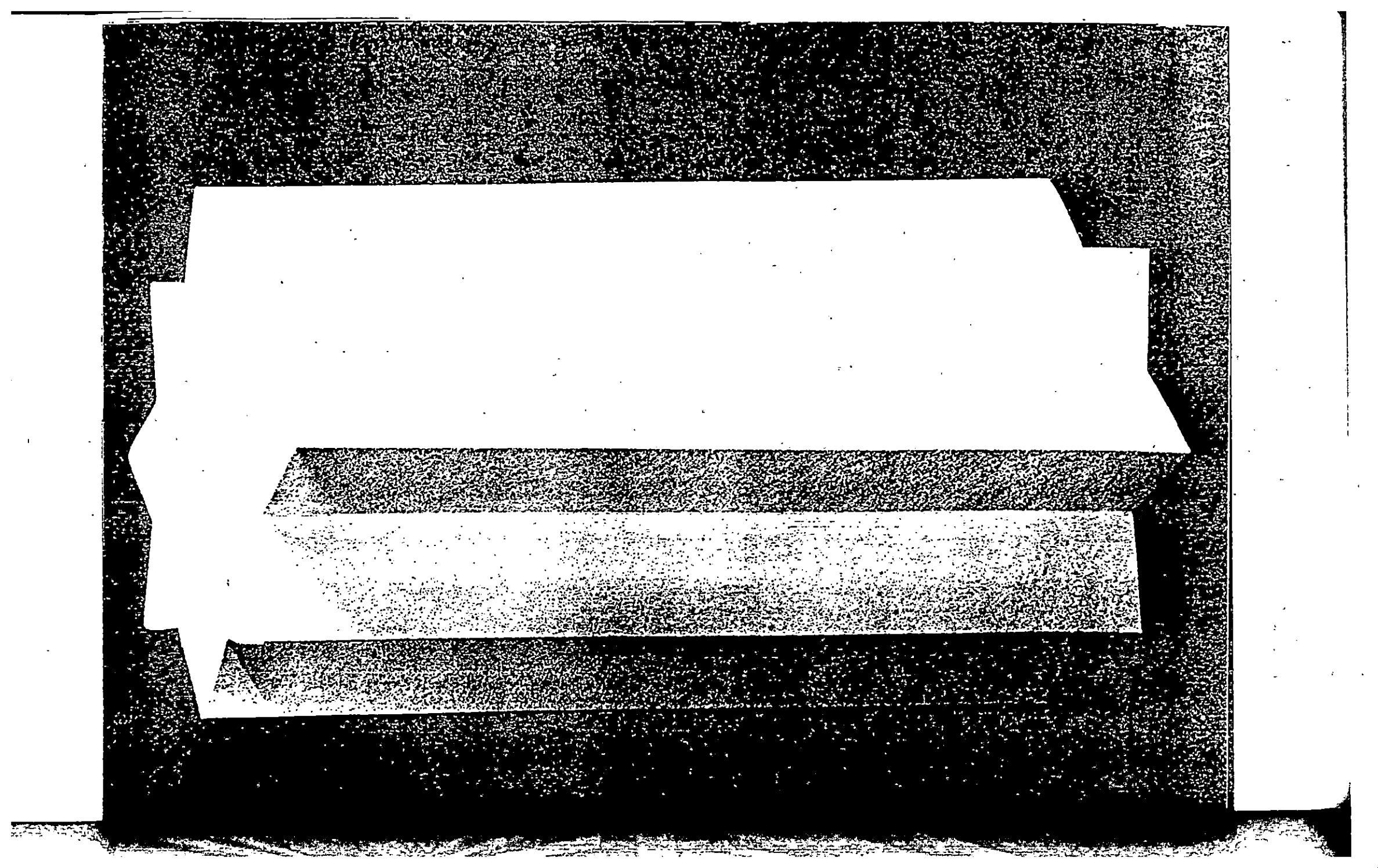
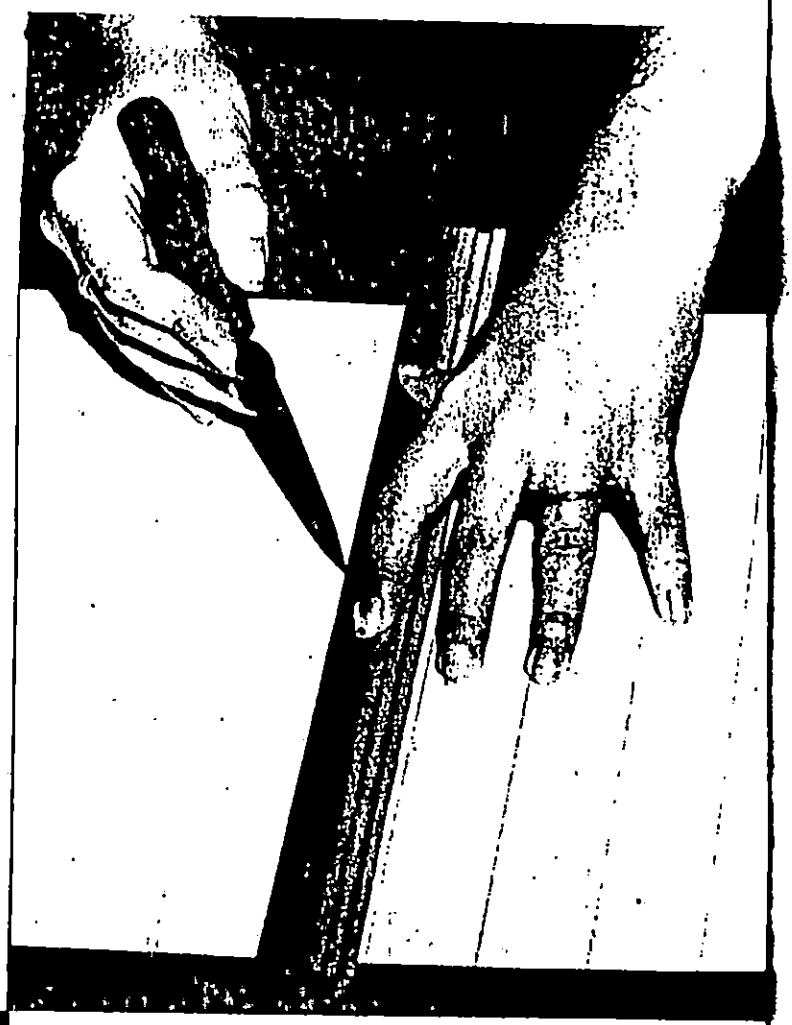
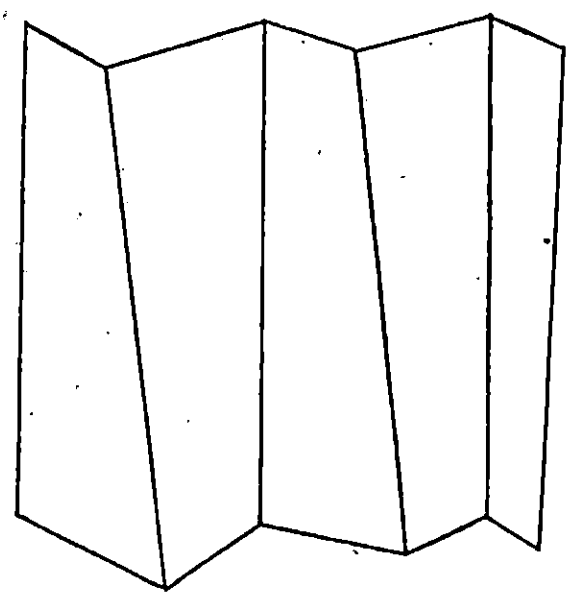


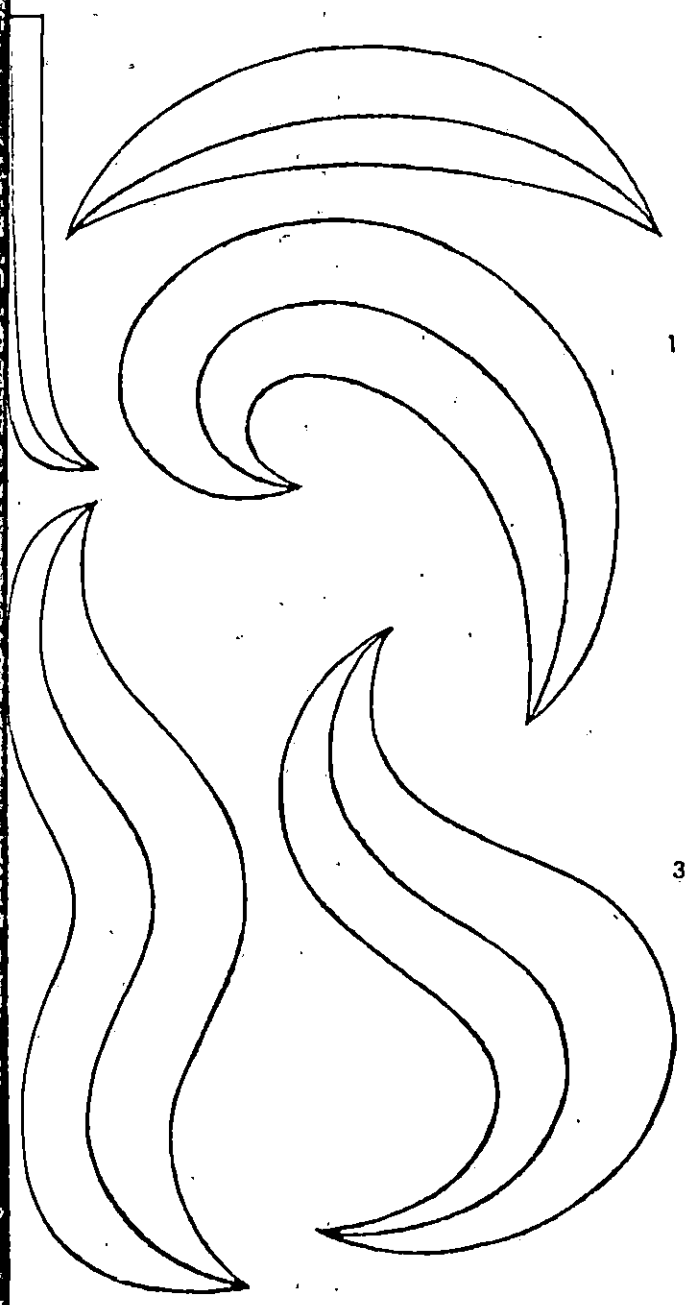


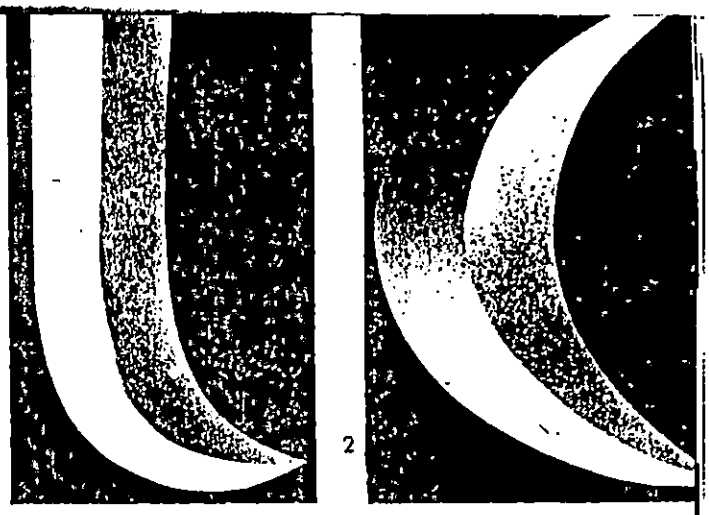
SCORING

coring is a process used in changing paper m a flat surface to one that is three-dimenional in structure. The results are the same in folding or creasing, but with stiffer per an instrument is needed to break down fibers so that a neat edge will be secured d the paper will not crack when it is folded. e technique varies with the type of paper ed. For construction paper a sharp, hard ncil will generally suffice, while for very avy bond papers a dull knife is satisfactory. smooth scissors blade, compass point, or l file is also recommended for use. Parchent papers must be carefully scored to avoid gged edges, and since they are translucent, ncil lines will show through. The best method be determined by experimenting on scrap per. If the paper is not very heavy, all oring can be done on one side only and the ds bent in either direction. If it is rigid, like avy Bristol or chipboard, every other line st be scored on the reverse side of the paper fore folding.









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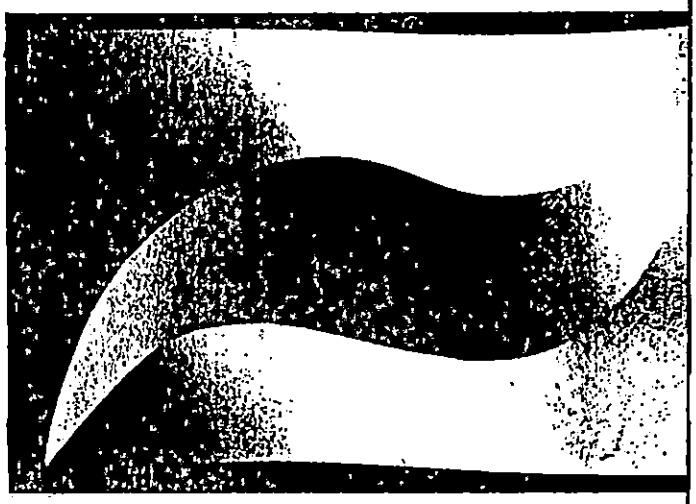

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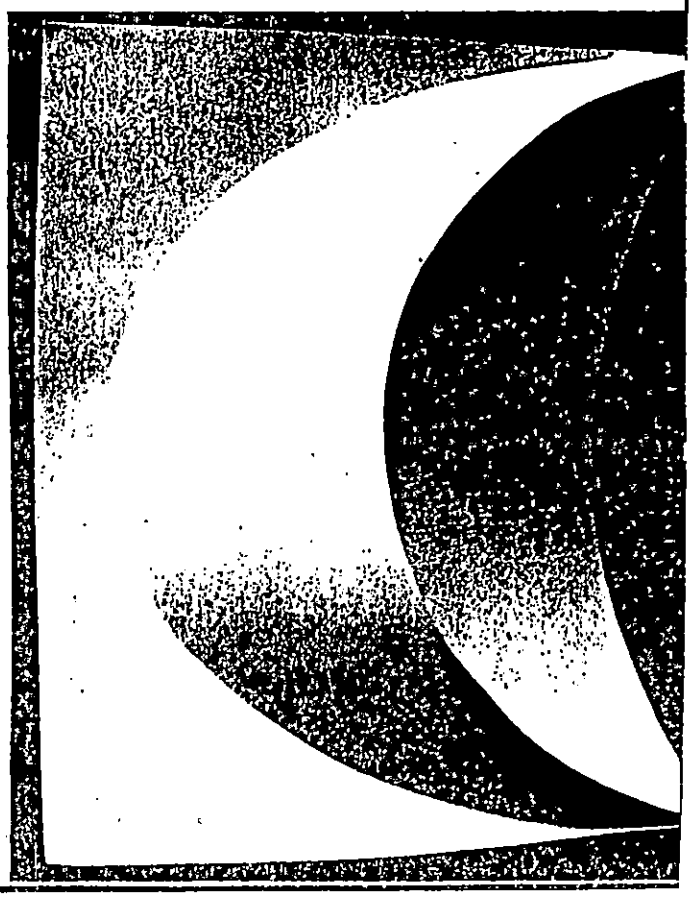
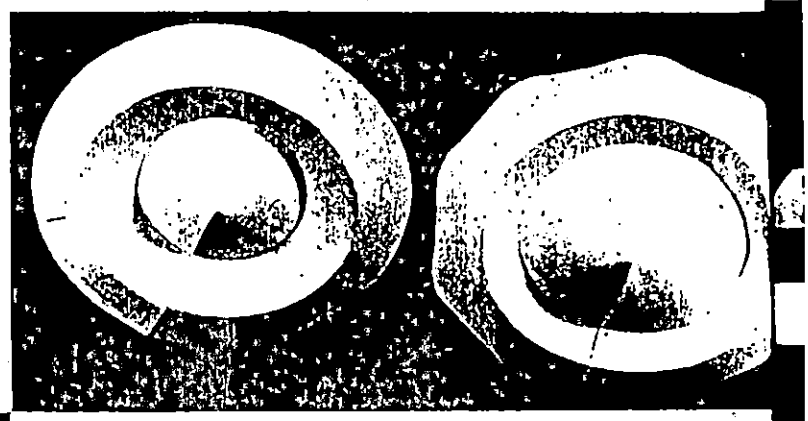


4

Curves are beautiful structures when scored. Shown here a number of different kinds that may be constructed freehand or with the use of a French curve. It is advisable to experiment with making a single curve at first, then reverse curves, and more complex ones later. Paper scored with a curved line no longer remains flat but becomes three-dimensional. When two lines are scored, one bends in the opposite direction from the other. Applications of scored curves will be found throughout the book.

A circle becomes a three-dimensional structure when it is slit to the center and scored. Any number of lines can be drawn on the circle with a compass and then scored. When the cut edges of the circle are overlapped, a cone is formed, as shown in these examples. In scored parts, a convex surface is always adjacent to a concave one. An application of the scored circle can be seen in the eye of the fish construction in figure 7. Figures 4, 5, and 6 show other variations.



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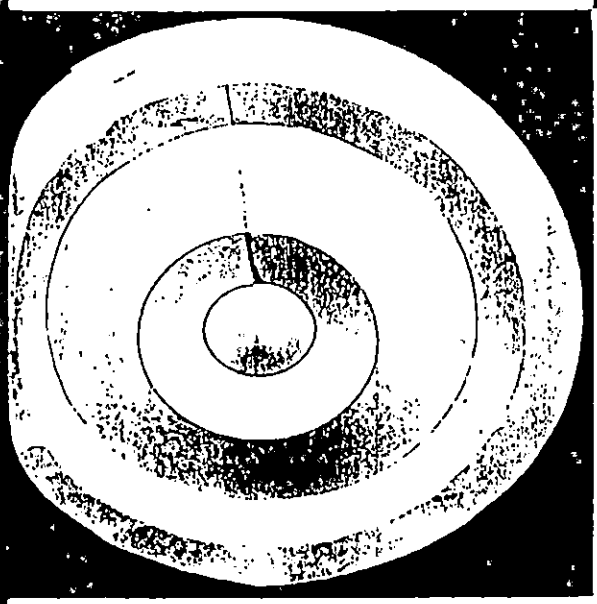

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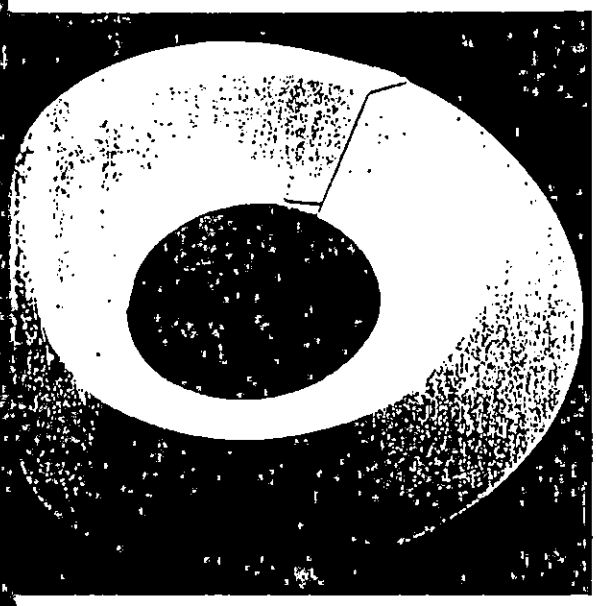

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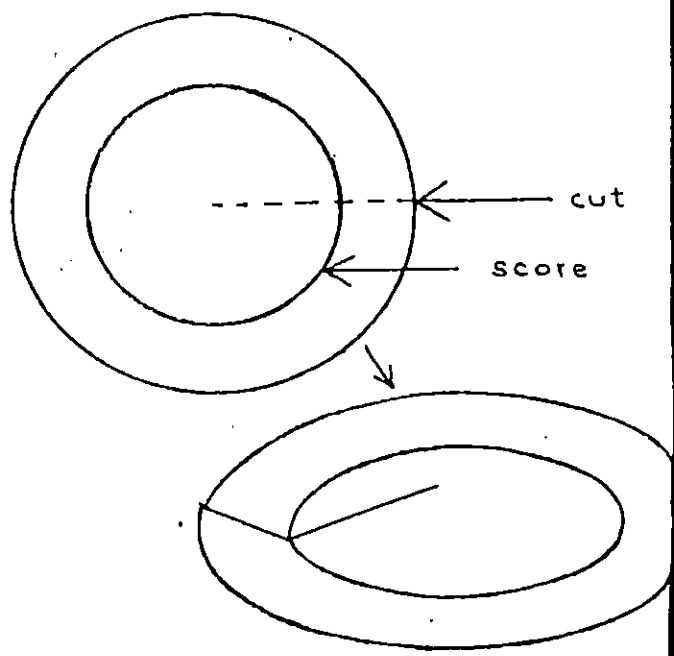

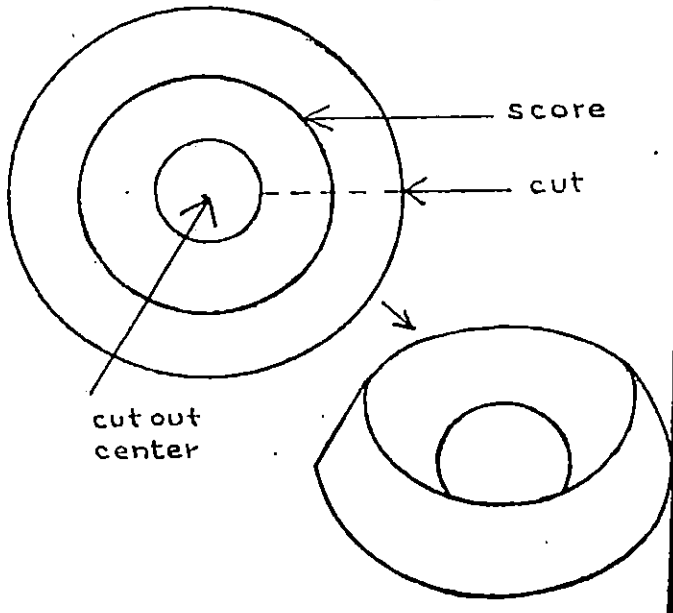

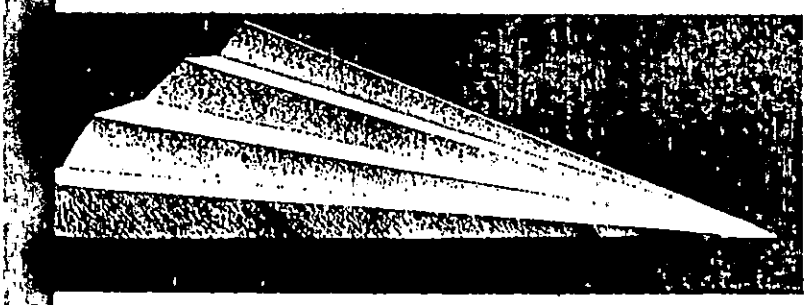

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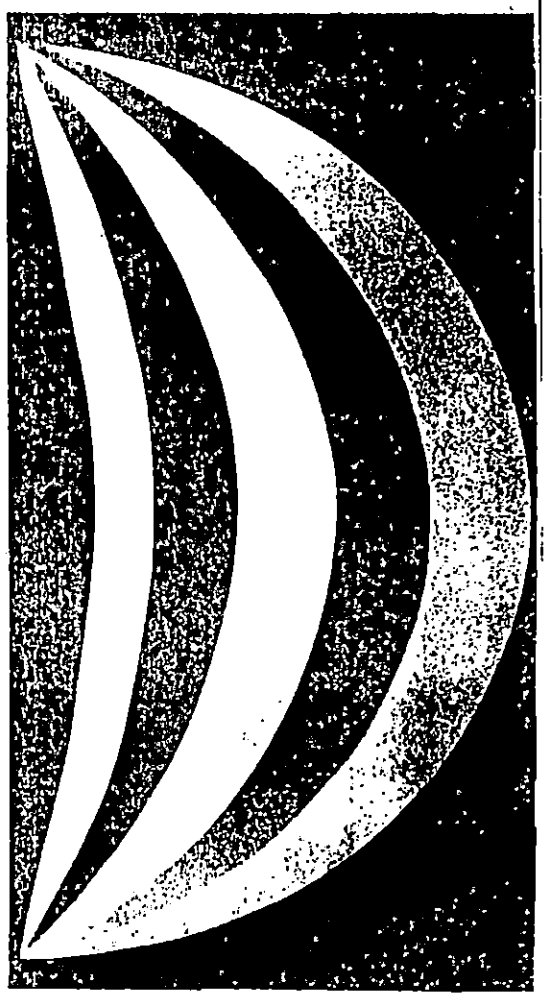

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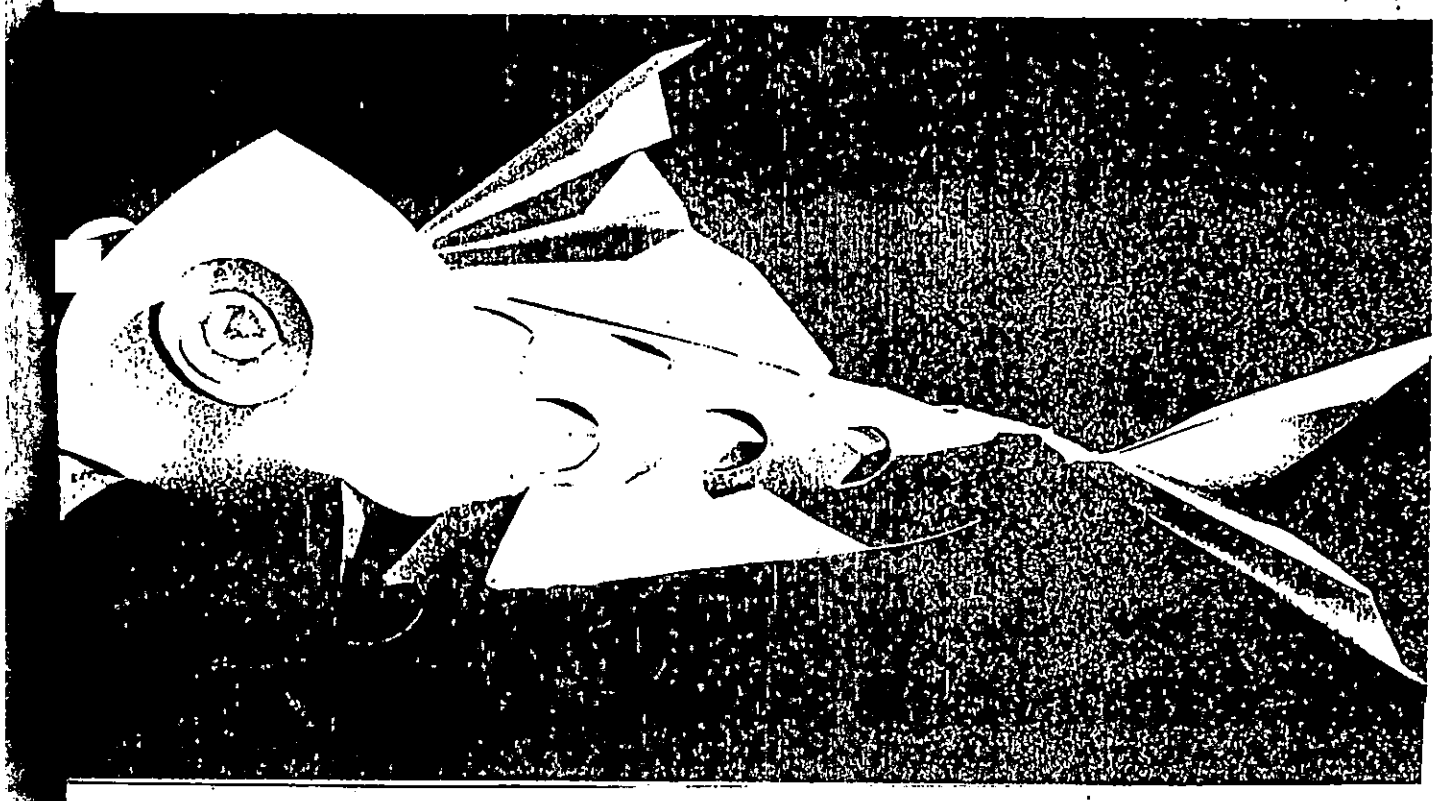

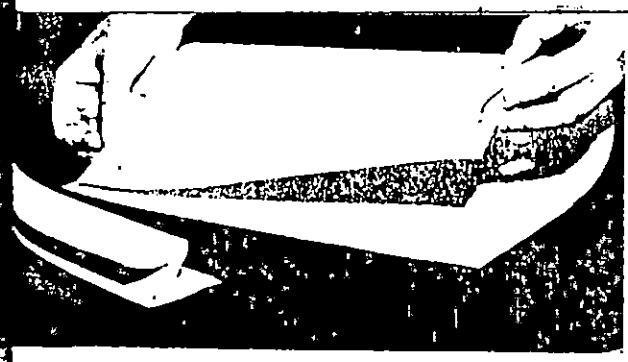

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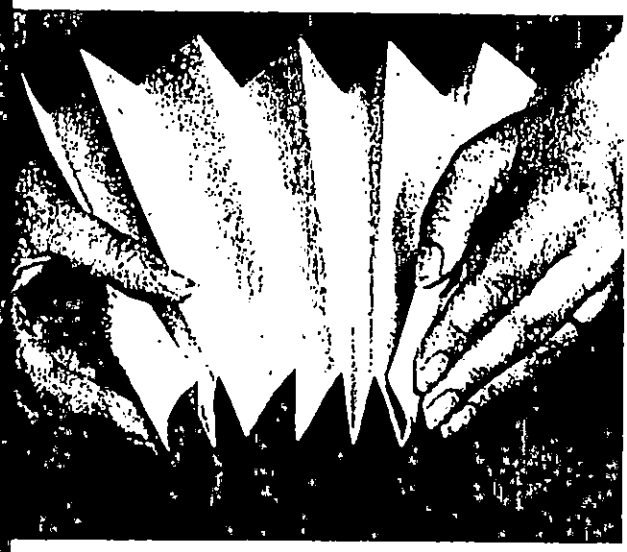

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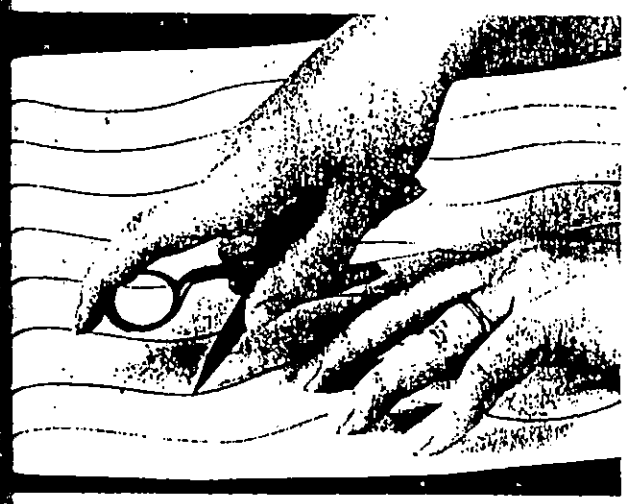

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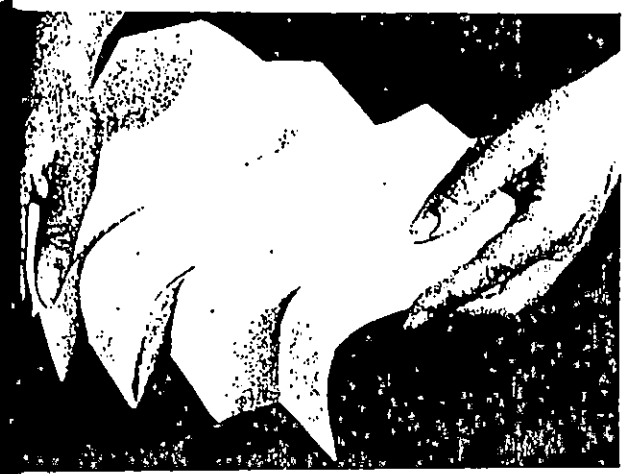
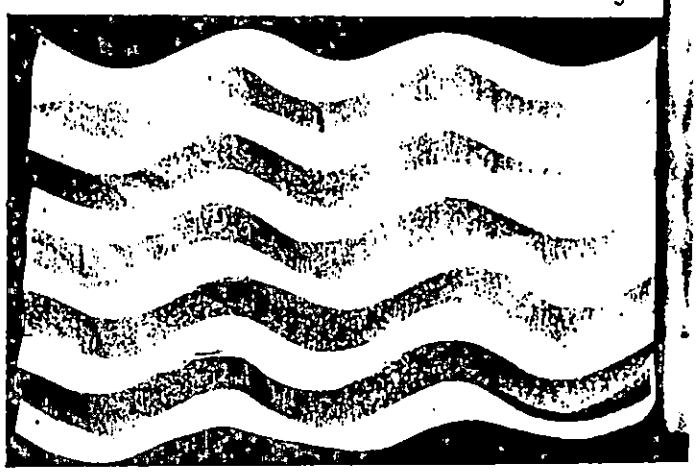


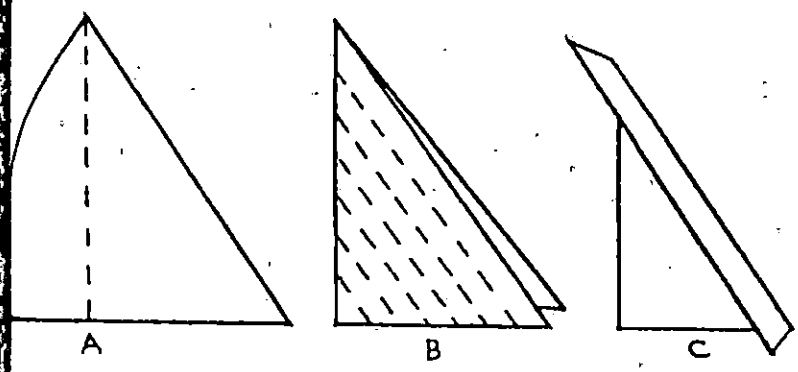
4

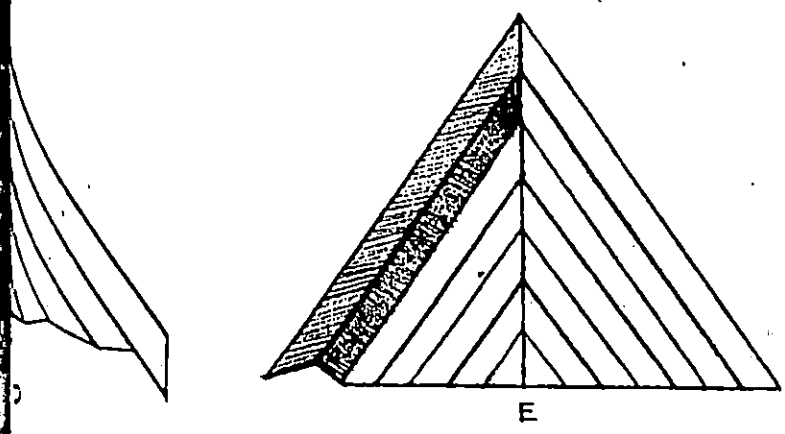
In order to understand the principle of scoring, it is helpful to refer again to folding. The beginner can grasp the meaning of transforming a flat piece of paper into a three-dimensional structure by folding a lightweight sheet like bond or construction paper in half as shown in figure 1. After it has been folded several times until the desired width is achieved, it will look like figure 1 on page 42. Folding the creases backward and forward so that every other crease is up, and the alternate ones are down, results in an accordion-pleated effect. Scoring is built upon a structure like this, with more complicated arrangements and planes moving in various directions, as will be noted in subsequent pages.

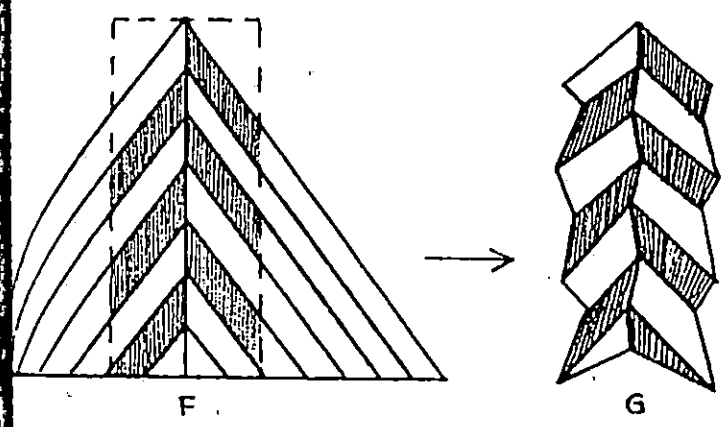
Curves, unlike straight lines, cannot be creased without first being scored with an instrument like a dull knife or scissors. They permit the direction of a line to be changed, and can be drawn free-hand or with the use of a French curve on a flat piece of paper. After scoring, every other line is bent upward and alternate lines go down to produce a three-dimensional effect. See figures 3, 4, and 5.

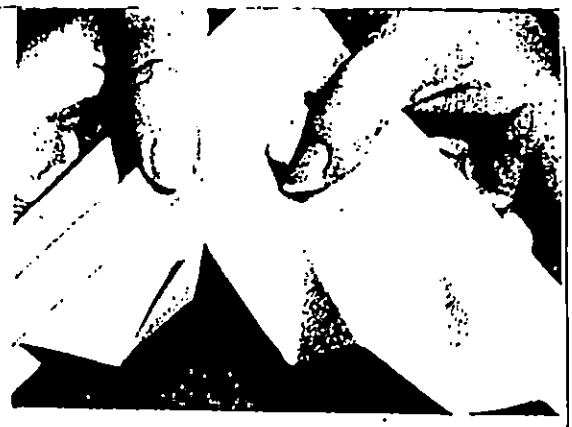
5







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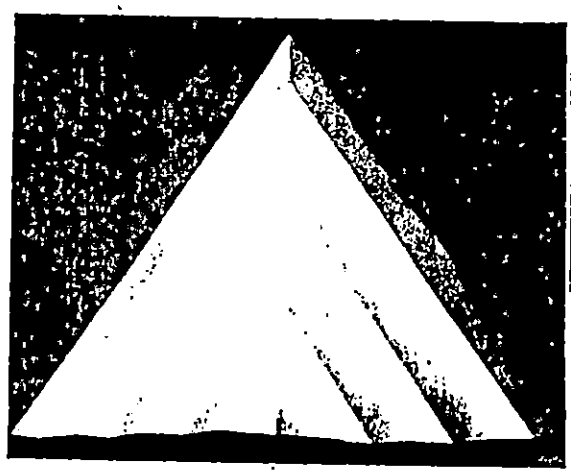
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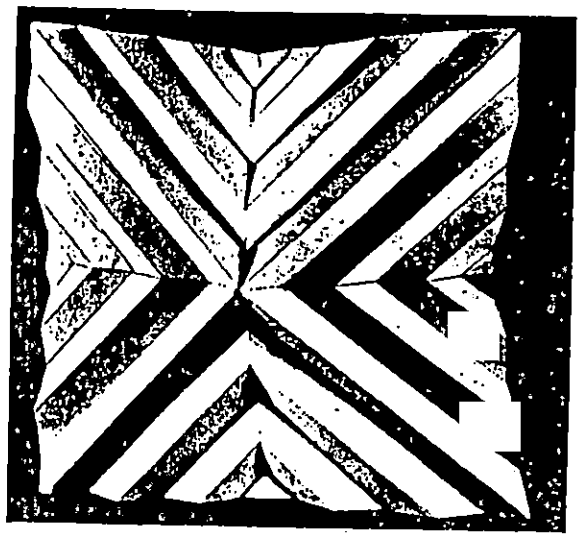
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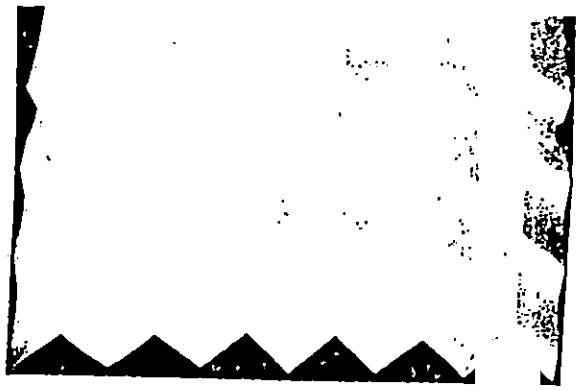
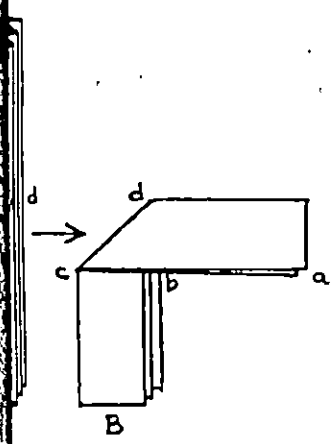
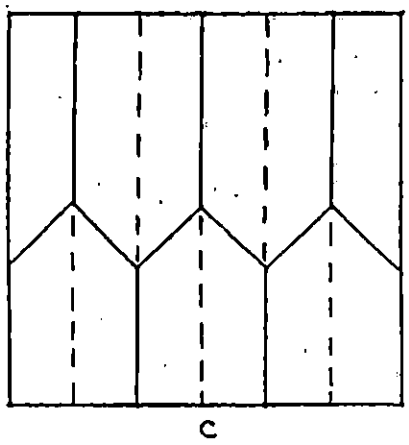
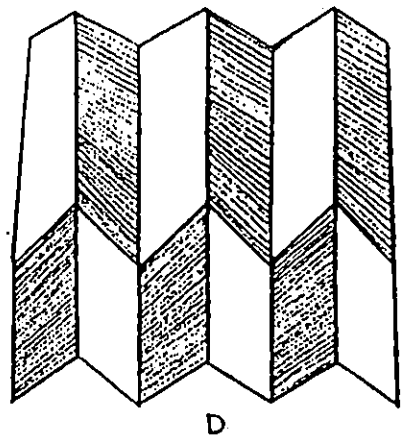
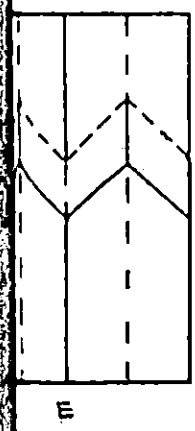

4

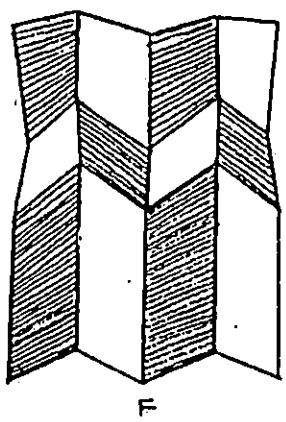
...gle fold problem will help clarify the principle of chang-...irections in diagonal scoring. An isosceles or equilateral ...gle is folded in half (diagrams A and B) and then ac-...rdion-pleated. When completely collapsed, it is opened up ...creased so that the lines alternate upward and downward ...om E). When the whole triangle is again collapsed as a ...rip, the short vertical lines through the center will auto-...ally go inward and outward as diagramed. This can be ...more easily if a section in the center is cut out (diagrams ...G).

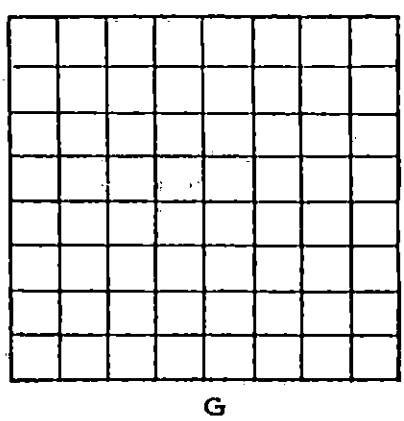


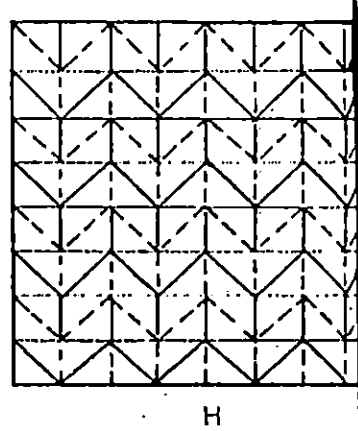




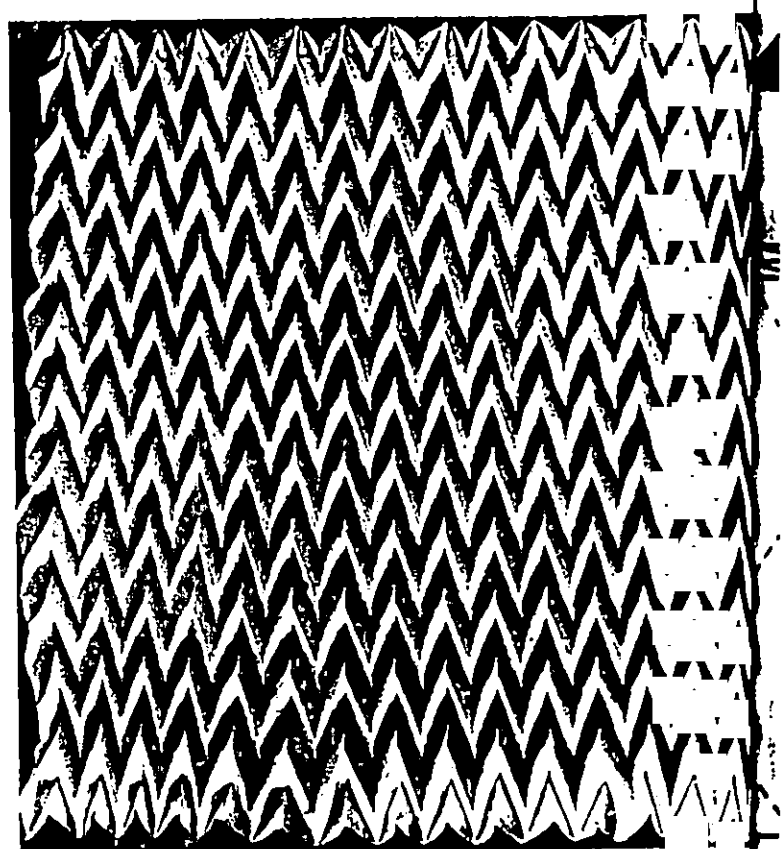




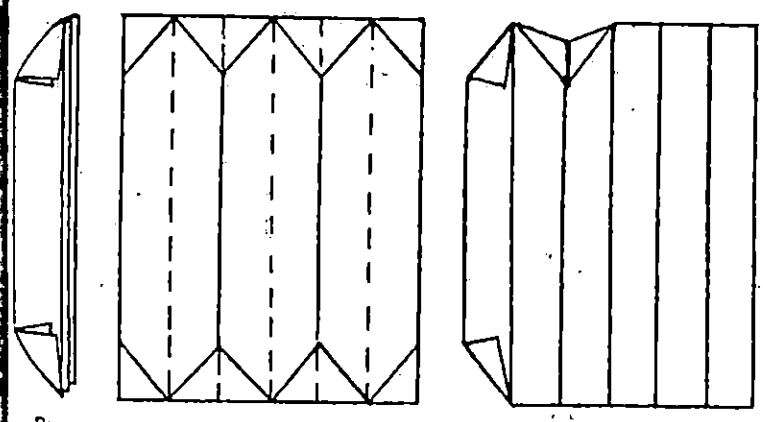




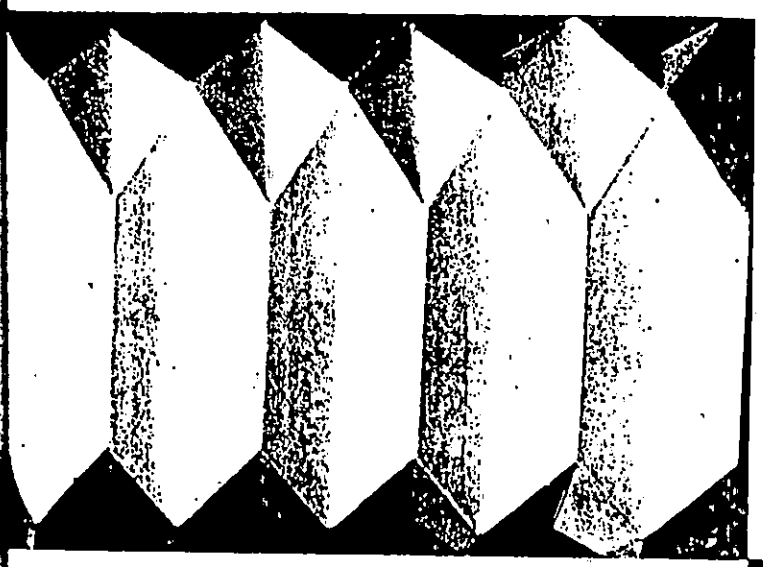
principle of diagonal scoring, illustrated e beautiful Finnish paper at the right, is ained by simple folding techniques with tweight paper in the diagrams on this e. An understanding of this process can to many exciting variations of the same ing principle. A sheet of paper folded in several times is again folded (diagram the mid-mark to form a right angle, then ed flat. The diagonal folds are creased e same direction while the verticals alter- upward and downward (diagrams C and the paper will begin to round into a vol- as shown in figure 2 on page 63. If sev- rows of diagonals are folded at equal ces apart, the paper will remain parallel e table. A grid can be constructed with l and diagonals drawn upon it and scored a pointed instrument. Dotted lines indi- downward creases.



paper study from the Arts and Crafts and dustrial Design School of Helsinki, Finland oduct design class; Ilmari Tapiovaara, adviser).



The diagrams on this page continue explanations of the principles of scoring by means of simple folding plans. An accordion-pleated strip (diagram A) with the top and bottom ends folded (diagram B) provides the basic creases, which can be maneuvered into a form like that shown in figure 1. The paper must be opened and the folds reshaped to take alternate directions—the solid lines one way, the dotted lines another. At first manipulating the paper in this way will seem awkward, but facility in handling such folds comes with practice. It is very helpful to collapse the paper by flattening the creases while folding them. Figure 2 shows how one hand can support the structure and crease it from underneath while the fingers of the other straddle the pleats on top.



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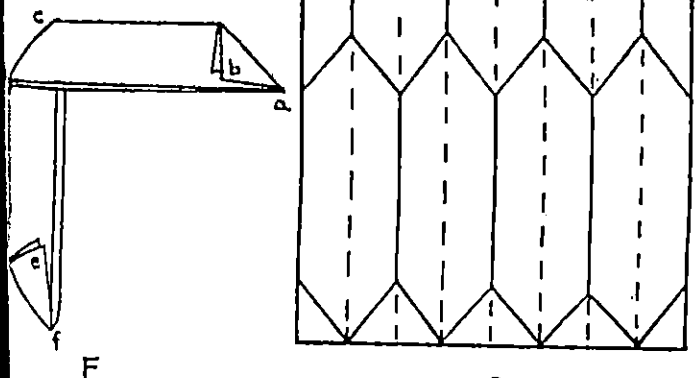

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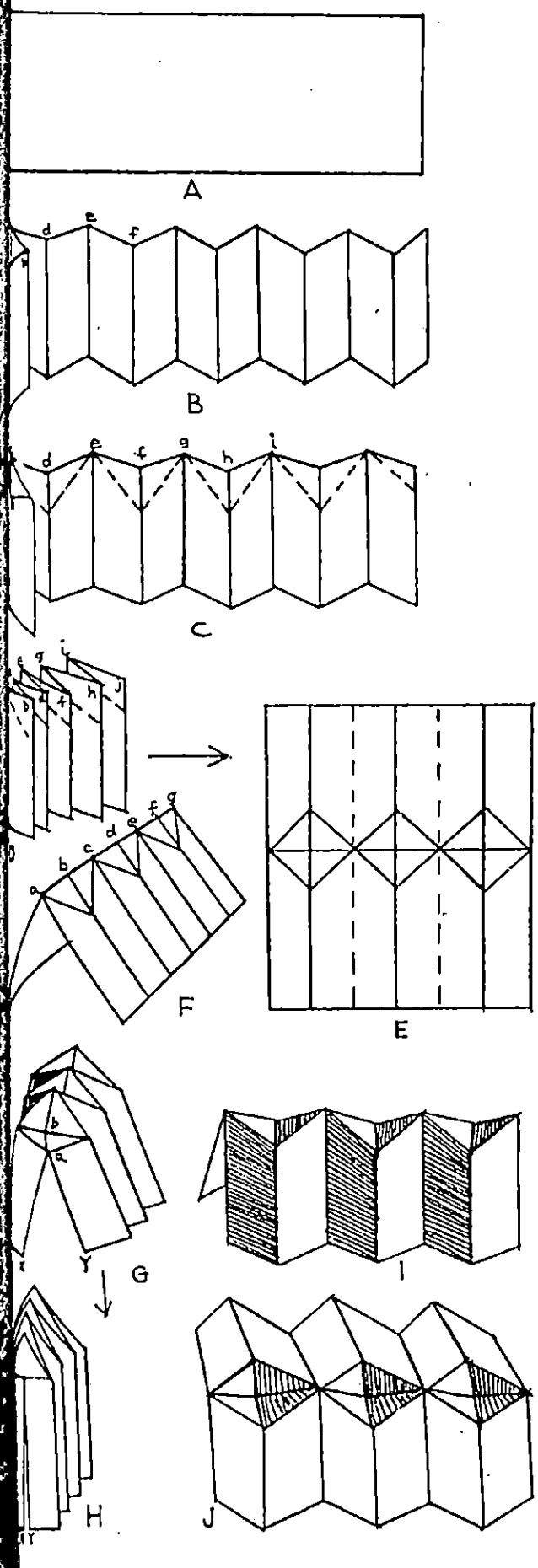
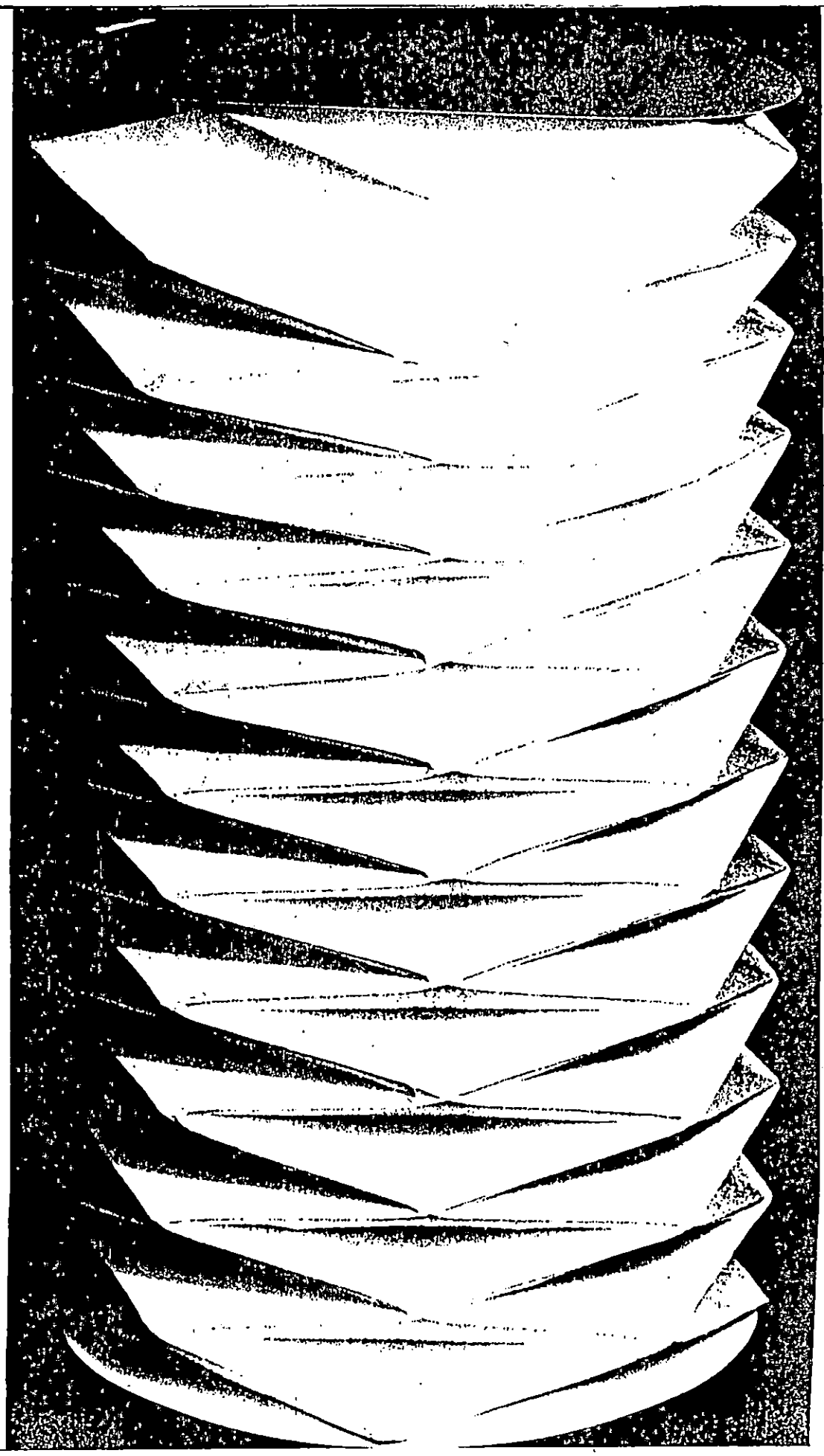
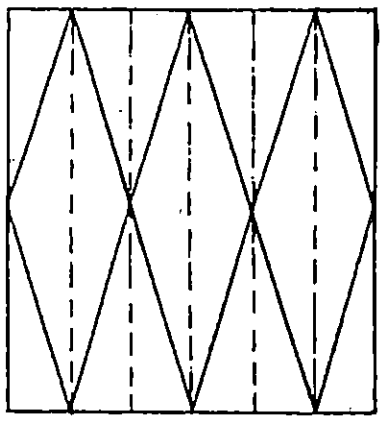


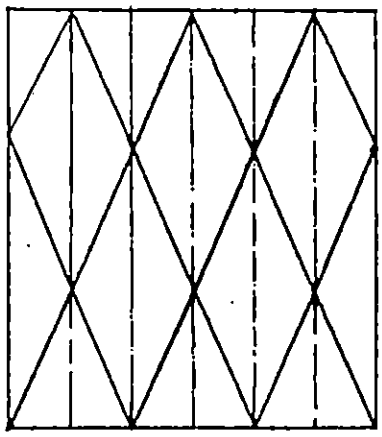
These diagrams show another approach to scoring demonstrated by the folding technique. A lightweight sheet of paper is folded in half and then into pleats. The top of each pleat is creased downward at right angles, bent backward, and creased again, as in diagrams B, C, and D. When the paper is opened up flat it reveals diamond shapes creased in the center. The long verticals are then refolded into accordion pleats, and the structure is spread out like a tent (diagram F). Looking down on the diamond shapes, begin at the end marked *x* and *y* and push the horizontal crease downward at *b* (diagram G). Pull *x* and *y* together until they meet, forcing the diagonal creases of the diamond upward. Continue collapsing each diamond flat as in diagram H. When the paper is stretched out again (diagram I), the recessed diamonds appear. A top view (diagram J) shows the paper beginning to round into a volume. An application of this principle is shown in figure 3 on page 63. See also the directions on pages 52 and 53.

The beautiful cylindrical shape on the facing page is made from a sheet of butcher paper about 20 by 30 inches in size. It is based upon the grid plan of diagram H on page 56, constructed without drawing but entirely by folding and creasing. First the verticals are folded, with all the creases on the same side of the paper rather than alternating as with pleats. The paper is then turned over and the first diagonal line creased, starting at the upper left corner and counting over eight spaces at the bottom. This is continued until all the diagonal lines are creased in one direction. Then the lines going from the upper right to lower left are creased so that diamond shapes are created by the crossing of the diagonals. All lines must be sharply creased. Starting at one end, collapse the folds together, forming the shape shown in the photograph. This makes a structure approximately 14 inches high and 7½ inches in diameter. The outer edges are fastened together and a flat covering put on the top and bottom.

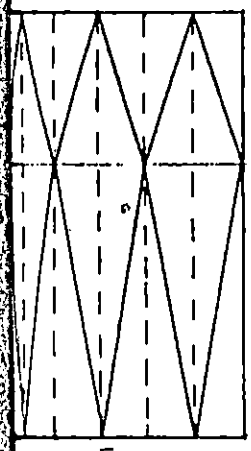




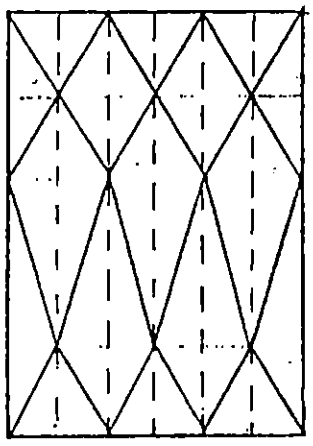
B



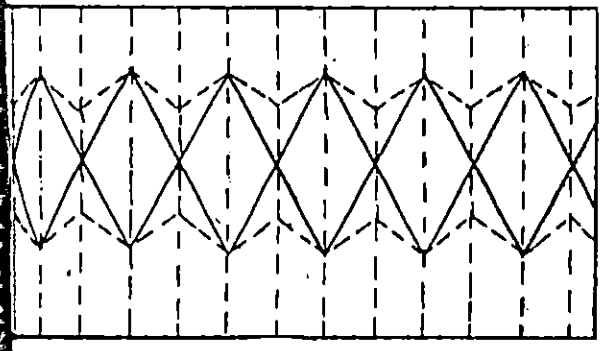
D



E



F



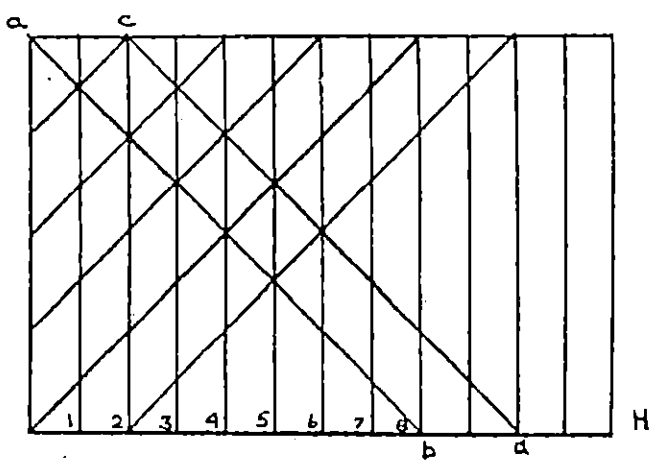
G

A convex structure can be formed of diagonal shapes rounded into a volume as explained in the diagrams here. The deeper the facets, the more sudden the rounding of the volume, while narrower facets provide for a more gradual form. The form of the volume is controlled by the number of the diagonal shapes as well as by their length, width, and contour. The application of this principle is shown on the previous pages, in figure 3 on page 65, and in the Easter eggs on page 158.

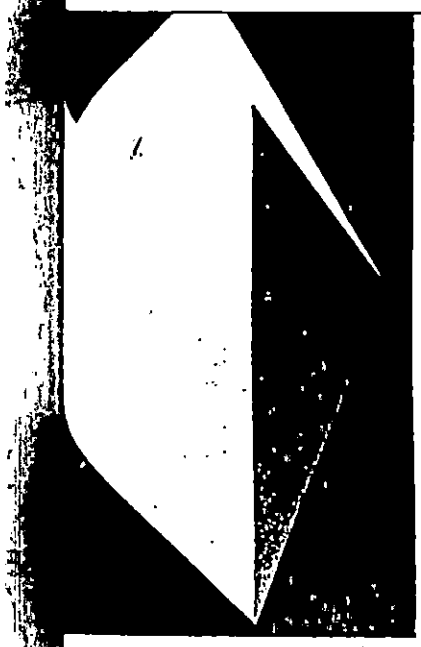
A lightweight sheet of paper is folded in half several times as in figure 1 on page 50. While the paper is still folded, it is creased on the dotted lines from the center of one edge to the opposite corners (diagram A). All the vertical lines are creased on one side of the paper; then the paper is turned over so that the diagonal lines can be creased on the other side. The diagonals can also be folded by creasing the paper from the top of one vertical over to the bottom of the paper two spaces over (diagram E). On heavier paper these lines have to be drawn with a pencil and scored with a pointed instrument.

For a more complicated arrangement, the paper can be folded and creased with three diagonal lines (diagram C). Any number of diamond shapes can be created by introducing more creased diagonals.

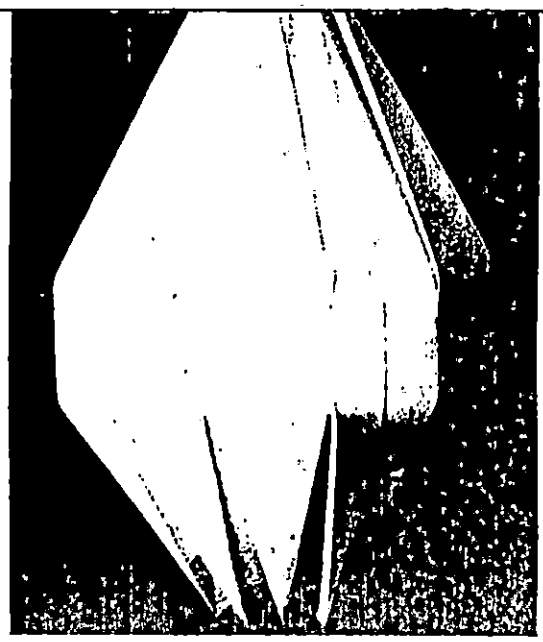
Suggested variations are shown in diagrams F and G. Other plans can also be tried. A volume can be constructed by folding the diagonals eight spaces over (diagram H), as shown in the cylinder form on page 55.



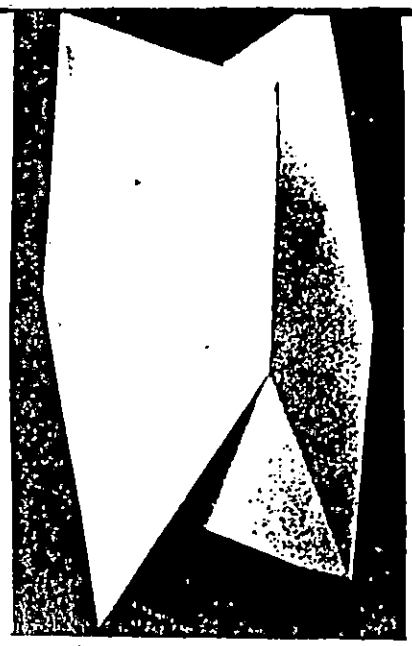
H



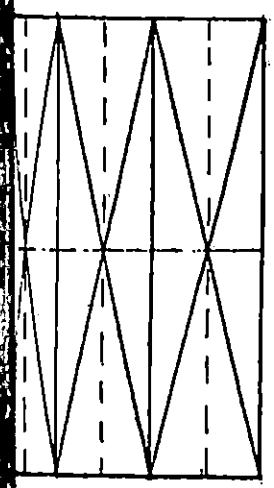
1



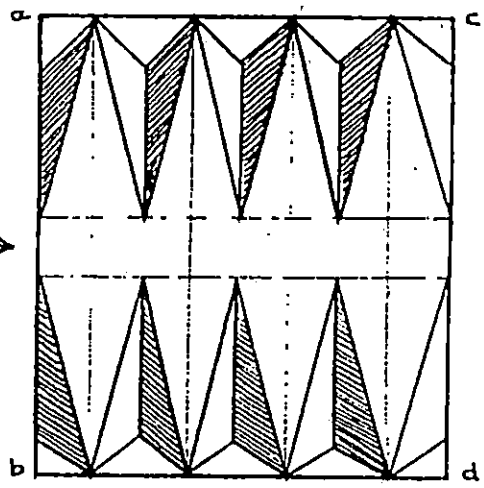
2



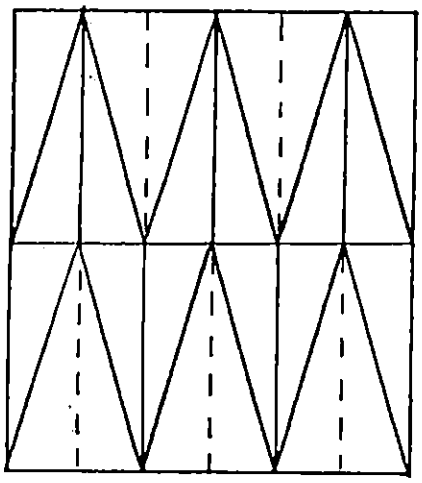
3



A

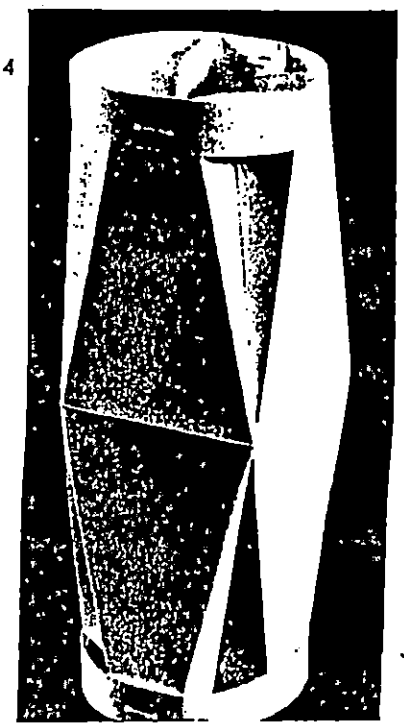


B

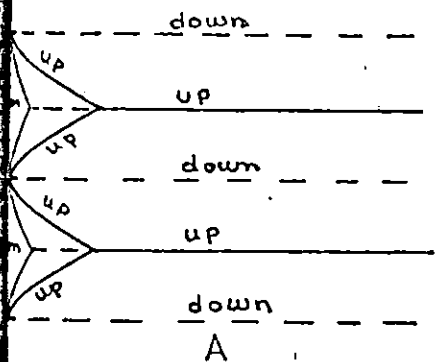


C

4

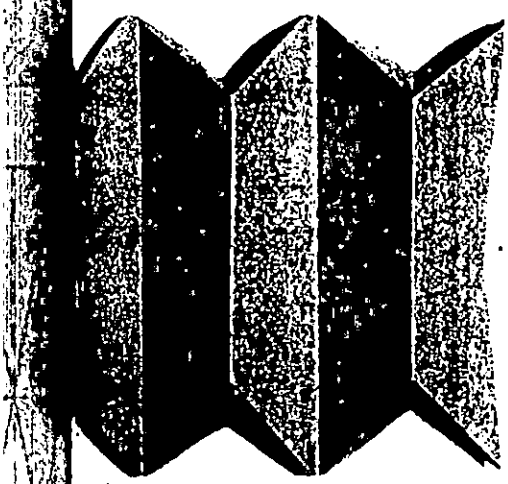


All of the volumes on this page are created from the same basic plan with slight variations and changes in proportion. In figure 1 the diamond shapes are broader across, while in figure 2 they are narrow and separated by a band through the center. In figure 3 the parallel diagonal lines are all creased on the same side of the paper so that they come forward, while the verticals are creased to recede. The outside edges are fastened together to hold the volume in position. The diagrams indicate the plans used in each of the photographs.

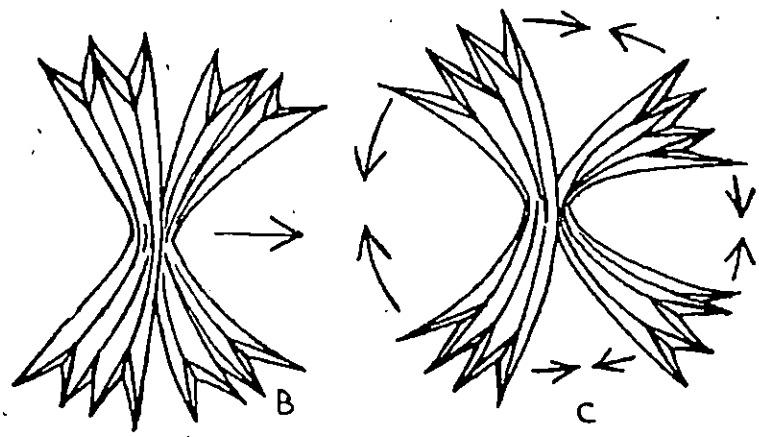


A

The scorings on the facing page are made according to the plan on page 53. The position of the scored creases in figure 1 is explained in diagram A, which shows how the lines alternate with one another. When one crease goes down or inward, the adjoining one comes upward. In making this scoring it is possible to work on either side of the paper by just turning it over. Figure 2 is an extension of the diagrams on page 53. Figure 3 is composed of two sheets of lightweight colored papers, scored or creased as in figure 1 and stapled together through the center while collapsed. It is then spread out and stapled together at the outer edges to form a circular shape.

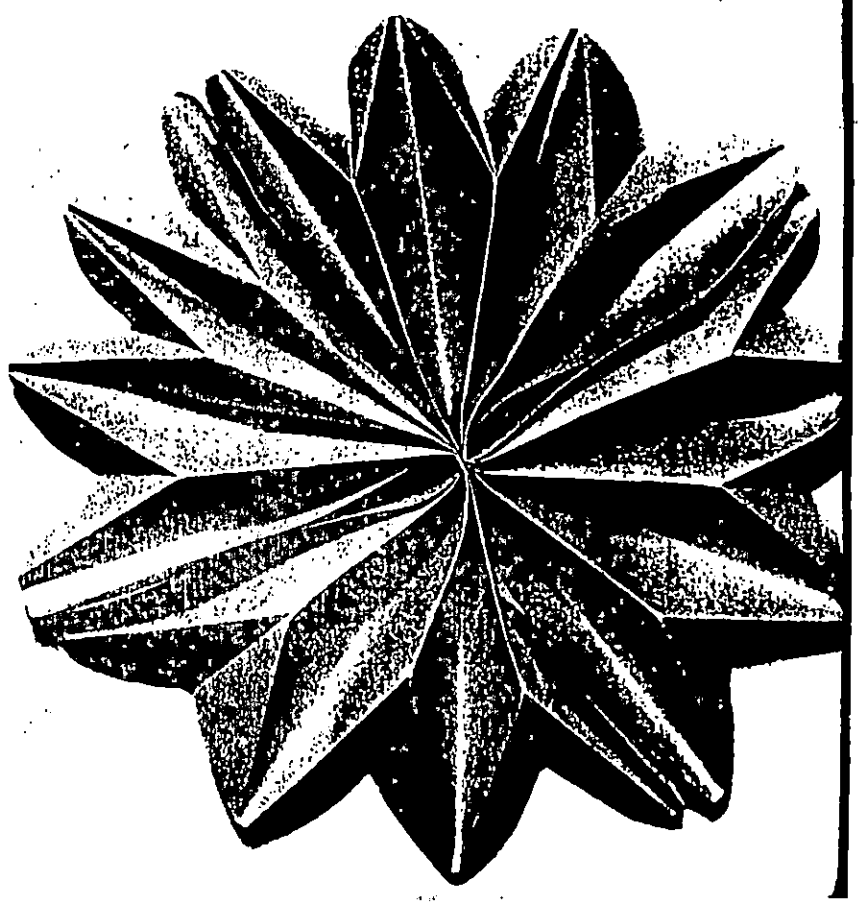


1

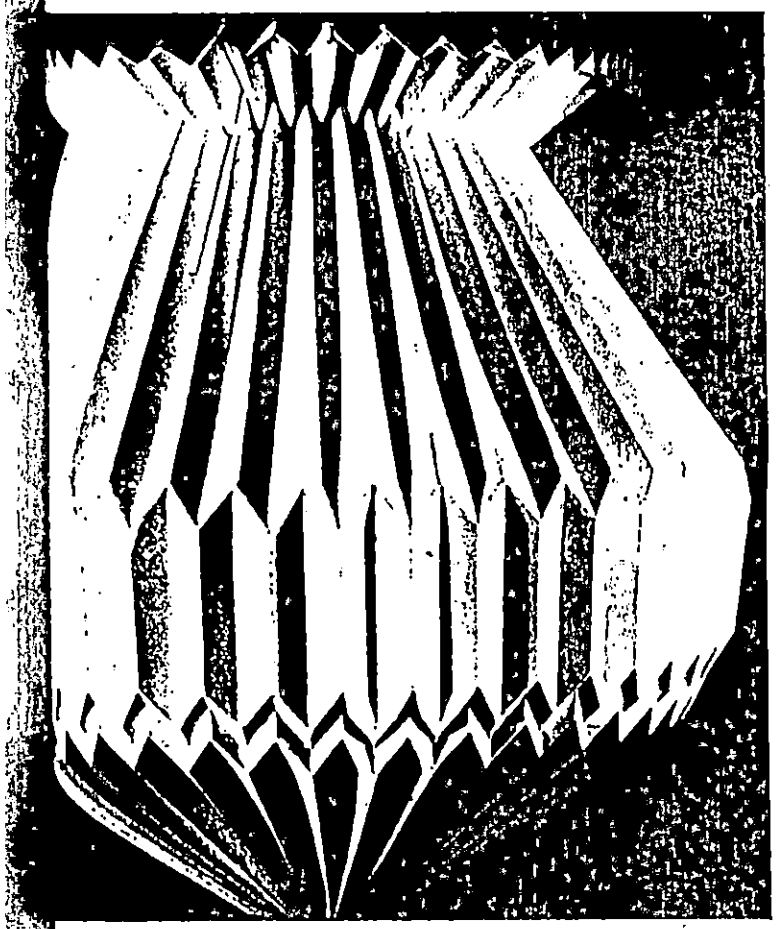


B C

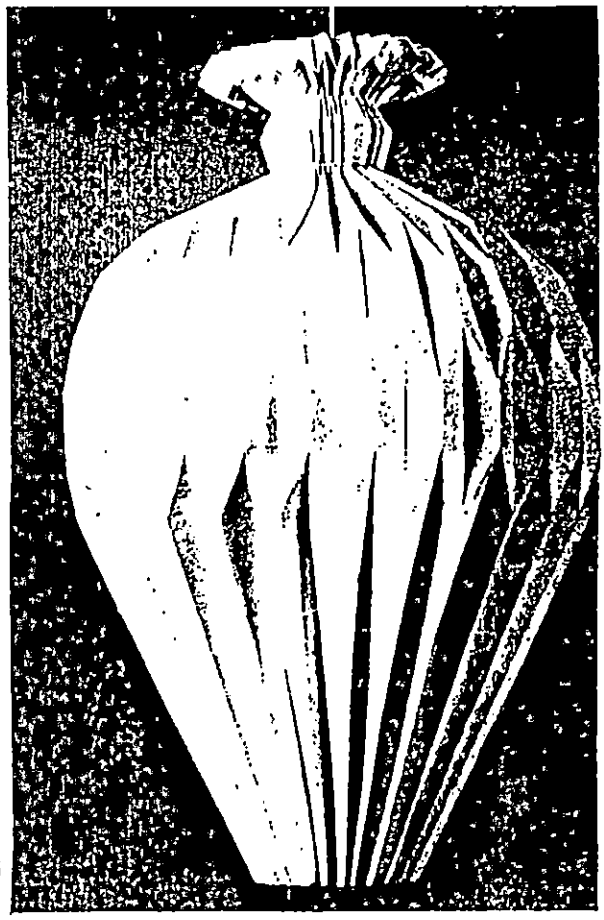
2



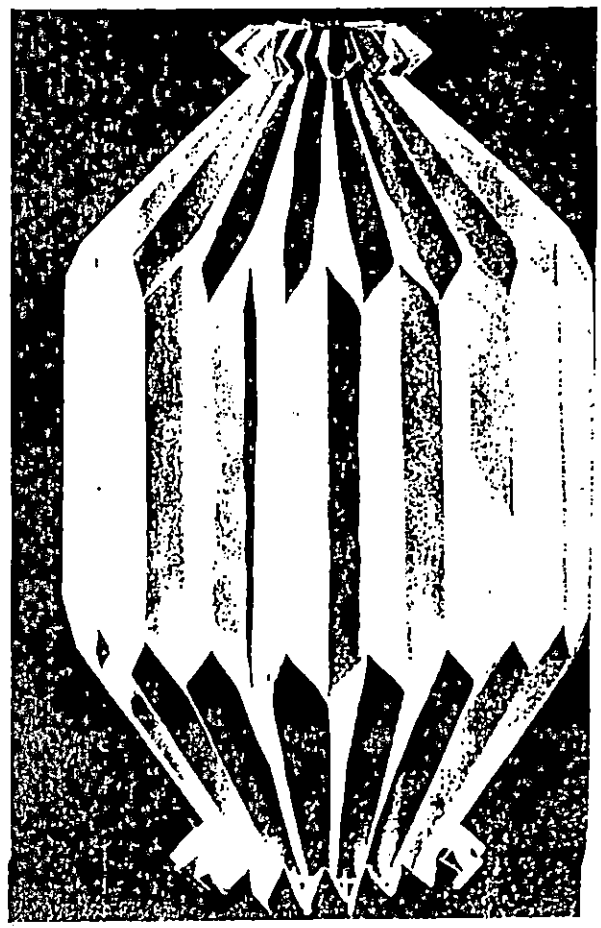
3



4

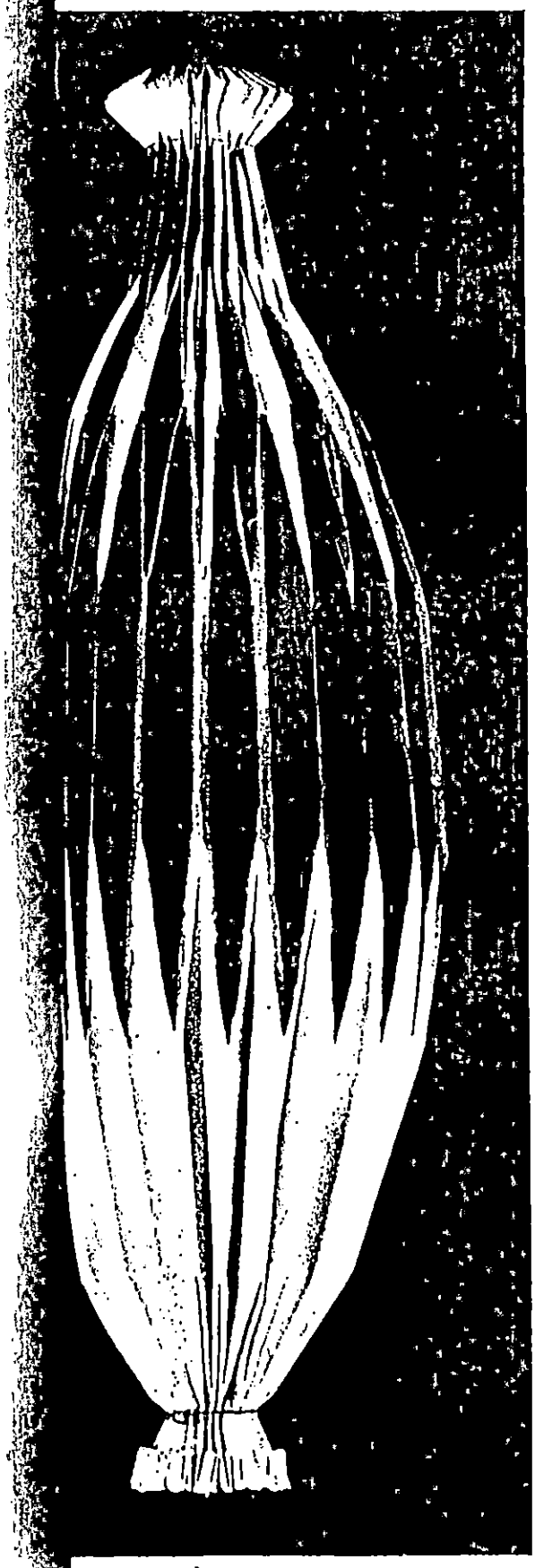


5

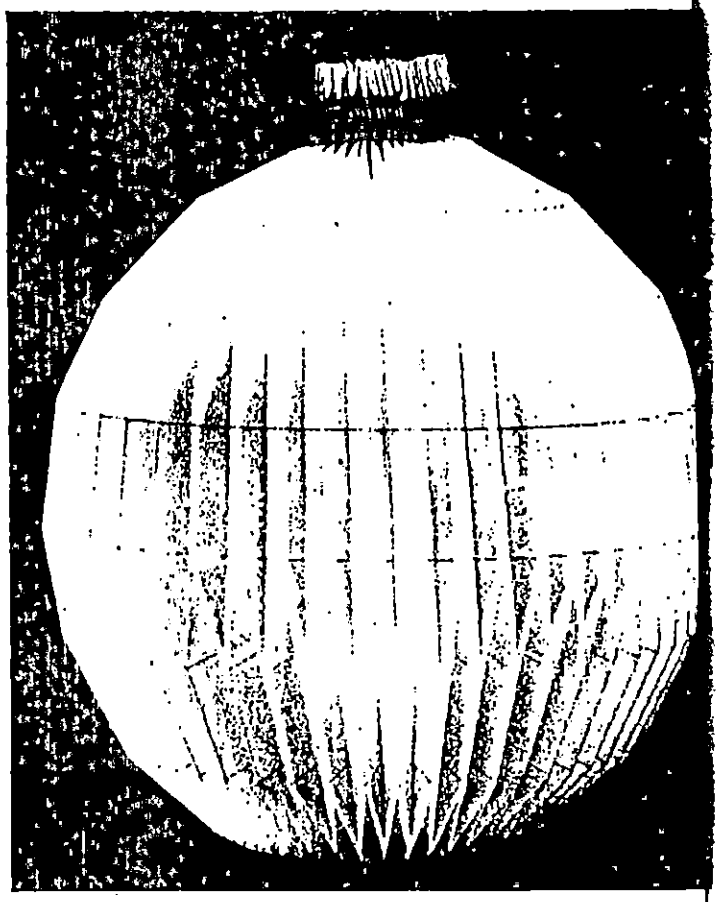


6

ferent volumes are created by changing the lengih
d width of facets as well as the proportional lengths
the diagonal lines, all controlling factors in the out-
re of the shape. The examples shown here are based
marily on the approaches explained on pages 53
d 58, but include more detail at the top and bottom
the structure. When forms like these are used as light
des, the paper should be prevented from touching a
light bulb or it will be scorched. An application of
er glass is sometimes effective as a protective coat
should be tried out first on a scrap of paper. To
e a translucent quality to the paper, a mixture of
f shellac and half alcohol can be applied, or linseed
can be used.



1



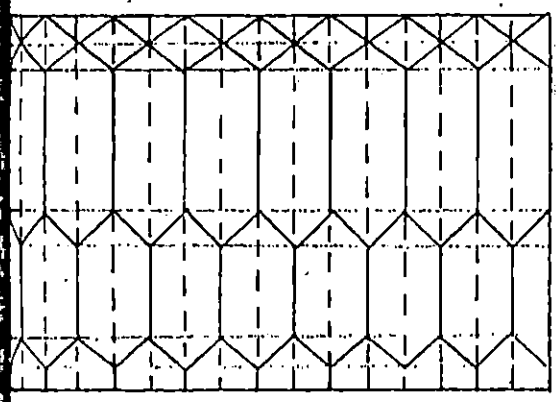
2

The volumes on this page, although different in shape, are based upon the same type of scoring. Figure 1, made of white construction paper, has the added interest of color applied with a brush and water paint. Figure 2 is made of medium-weight butcher paper, as is figure 3, page 65.

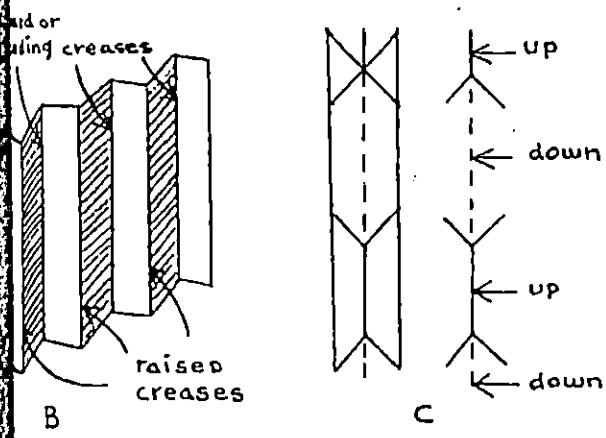
The form of the structure is controlled by the kind of pleats employed. Long pleats with long points will result in an elongated structure, while shorter pleats will permit the form to round out, with more paper being required for the fuller width. The following steps explain the procedures necessary to construct this type of volume.

First determine the size of the structure desired and the dimensions of the paper needed. For a structure like that in figure 2, a sheet about 14 by 50 inches will give a circumference of 28 inches.

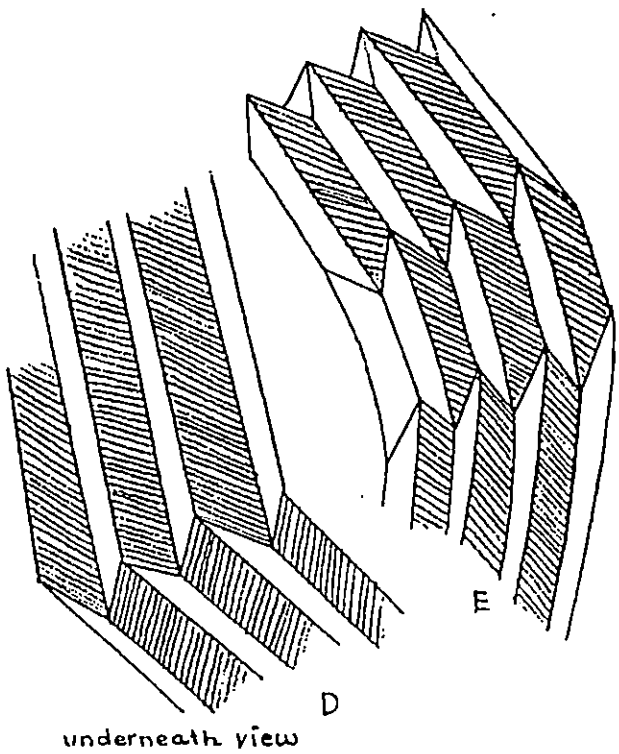
Draw the required grid plan with a sharp pencil and ruler, using light lines (diagram A). Score the vertical lines the entire length of the paper, and then score the diagonal lines. The hori-



A



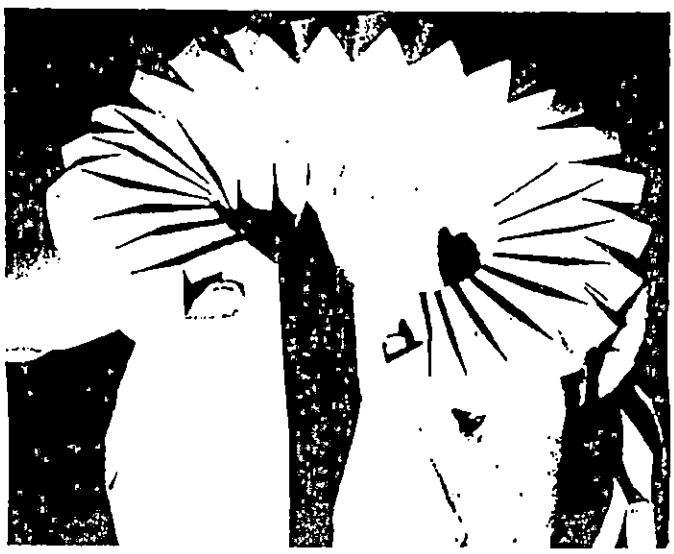
B C



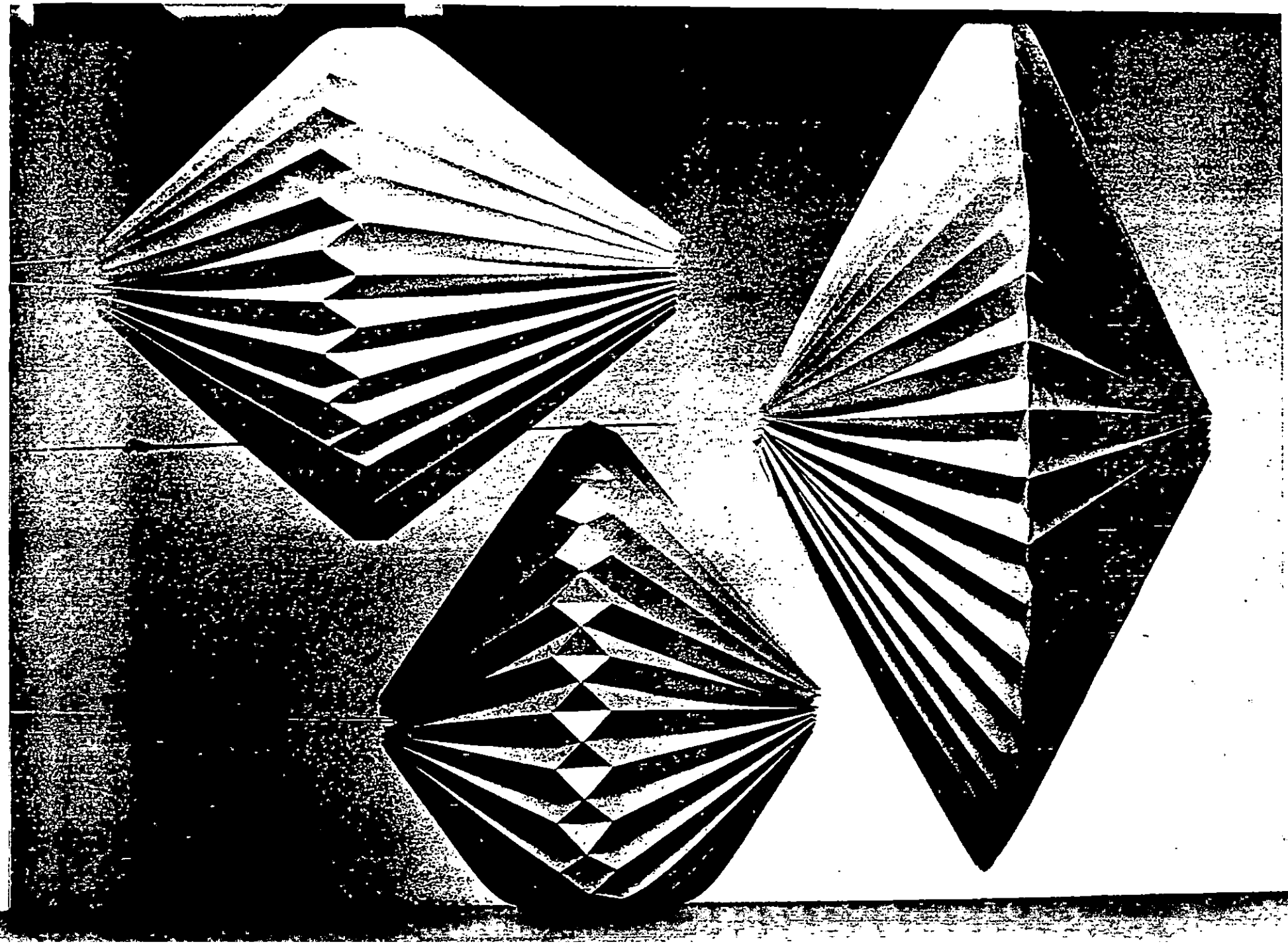
l lines are not scored. Bend the vertical lines an accordion fold (diagram B). The vertical must be recreased so that they are up where olid lines are indicated in diagram A, and where the dotted lines are shown. See dia- C for a more detailed explanation. To accom- this, place the fingers of one hand between lds and, holding the folds in place, raise the nals and fold the verticals in or out. At first oy seem awkward, but do not be discouraged. person works out his own system for achiev- sults after he once understands the principles ed. In order to become familiar with the pro- e, it is well to practice first on something like paper, which is easily creased.

he alternation of creases upward and down- changes a flat sheet of paper into a volume, own in diagrams D and E.

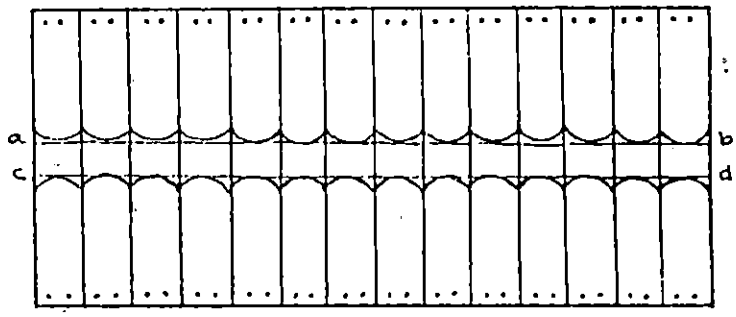
ull the top and bottom together as in figure secure with thread or a rubber band. Fasten dges together with rubber cement or staples.



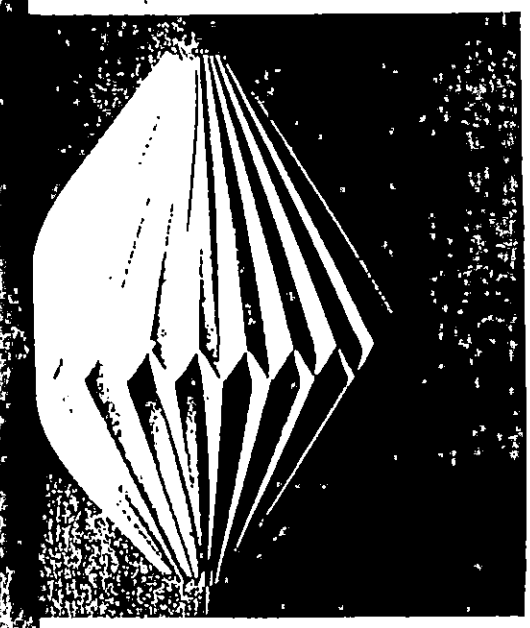
3



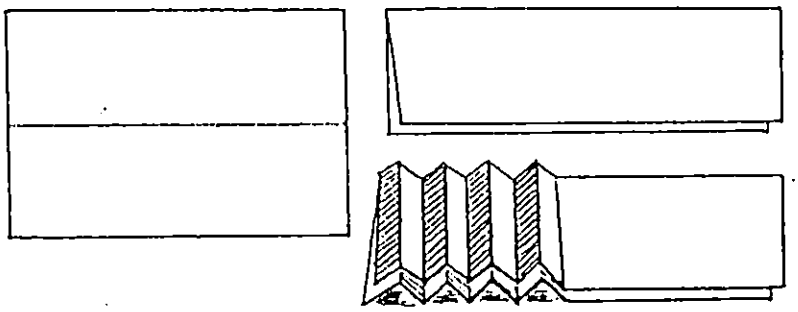
1



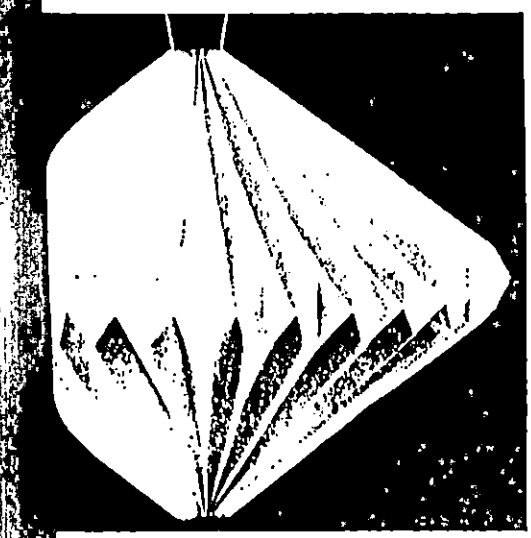
Start with a rectangle and draw lines ab and cd on either side of the center. Divide into vertical spaces. Draw curves and score each one. Punch holes at top and bottom and gather with thread. Do not crease or score the vertical lines. The scored curves can be varied by changing the size and proportions.



2

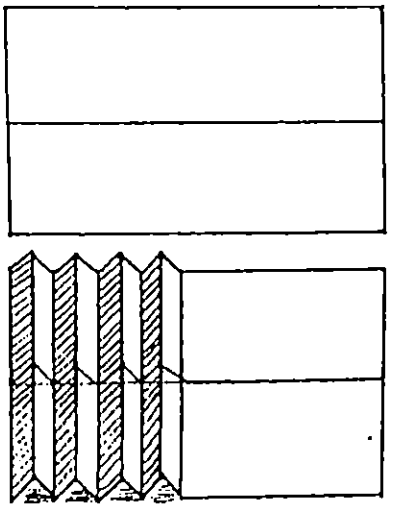


Fold a rectangle in half through the center. Fold into even pleats. Open the paper and staple the edges together to form a cylinder. Gather top and bottom by running a needle and thread through the folds.



3

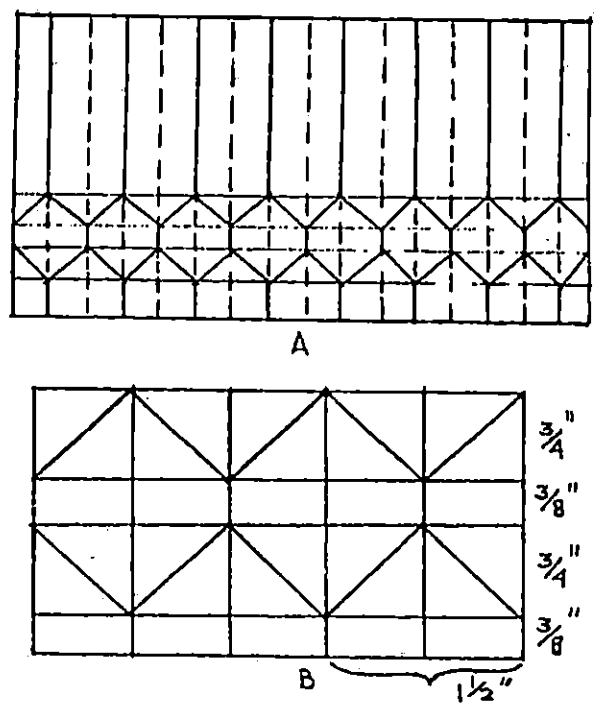
To make figure 3 see directions on page 54. For the bottom light shade on the facing page crease a rectangle through the center and open it up. Fold or score the pleats. Punch holes at top and bottom and gather with thread.

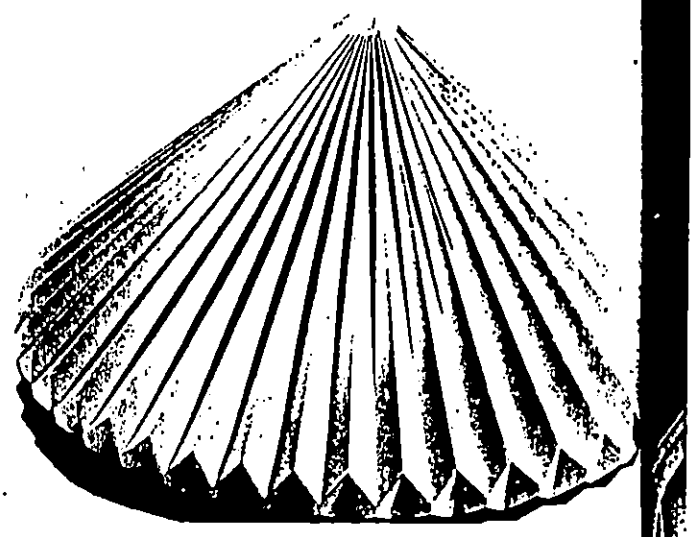


e cone-shaped structure in figure 2, constructed white engineering detail paper from a sheet 2 ds in length and 14 inches in width, results in a rm approximately 60 inches in circumference. e plan used for scoring is shown in diagrams A d B; the horizontal lines are guides only and e not scored. If paper is scored too heavily, it l break through. After scoring, the paper is ned over and creased on the opposite side to oid having the pencil lines show. It is usually ier to crease the verticals first and then the gonals. Holes are punched near the top, and a ead is run through to pull the pleats together.

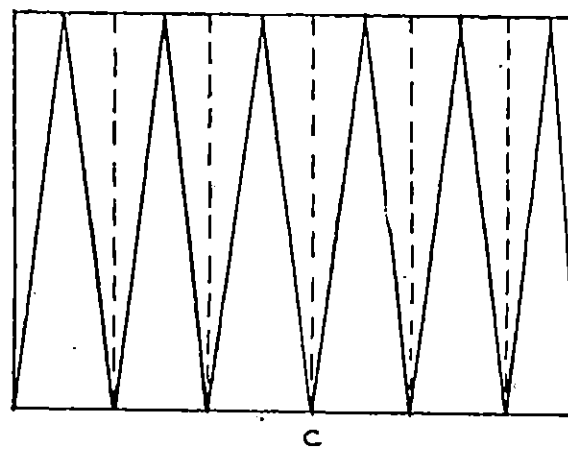
Figure 4 is a detail section of a scored light de with the lower edge folded up. The plan is wn in diagram D. To avoid having pencil lines w, the paper can be creased directly, but the om part of the diagram must be drawn on the erse side to coordinate the folding. All vertical d diagonal lines are scored, and the vertical ts are creased the full length of the paper as iagram E. The scoring in the top section of dia- m D is shown in detail in diagram F; the bot- section is creased more conveniently by turn- he paper over (diagram G). The bottom section be folded up an inch or more on line *ab* (dia- m H) so that the creases fall in and fit with the col pleats shown in diagram I, or it can be left n. The paper is pulled together at the top.

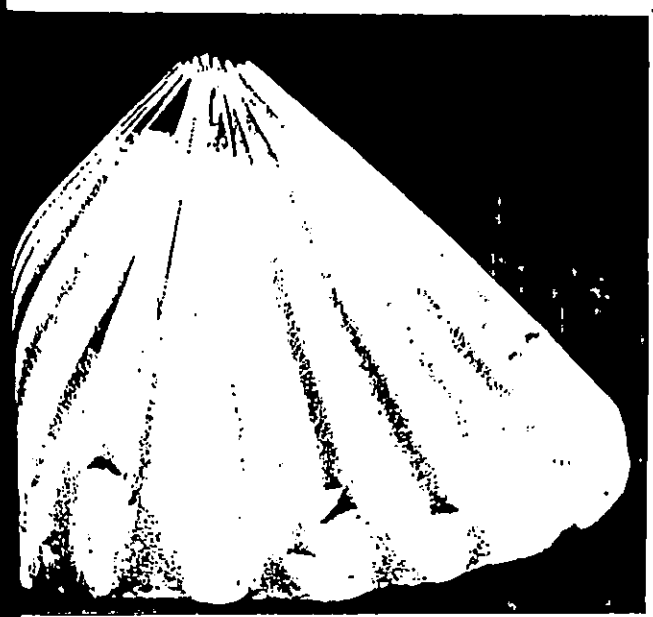
Figure 1 shows a structure made of a sheet aper folded double with the fold edge on the om. Another plan is shown in diagram C.



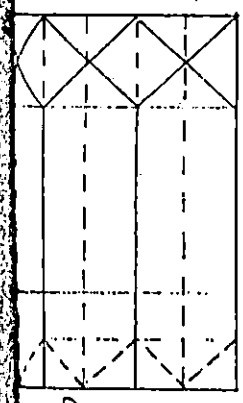


2

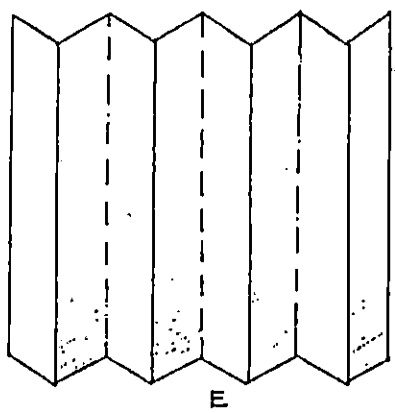




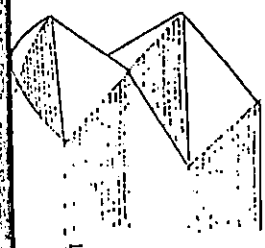
1



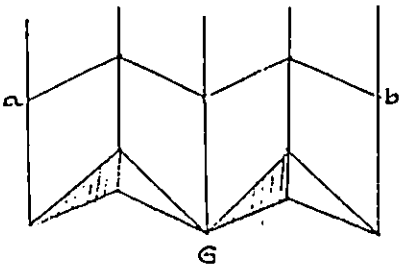
D



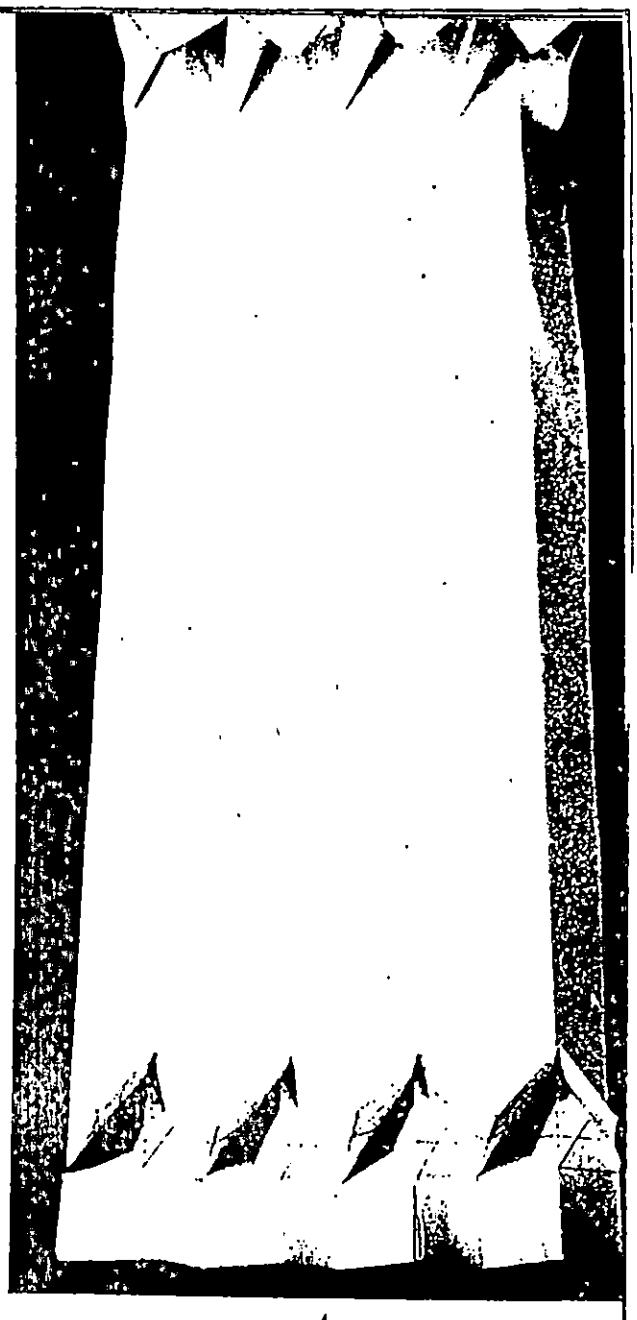
E



F

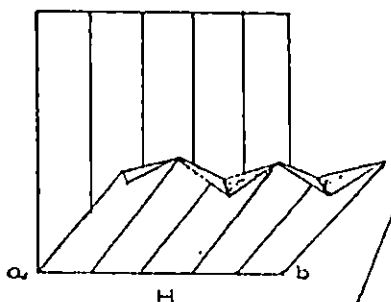


G

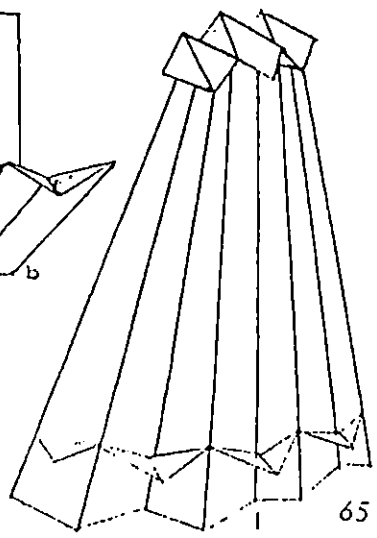


4

3

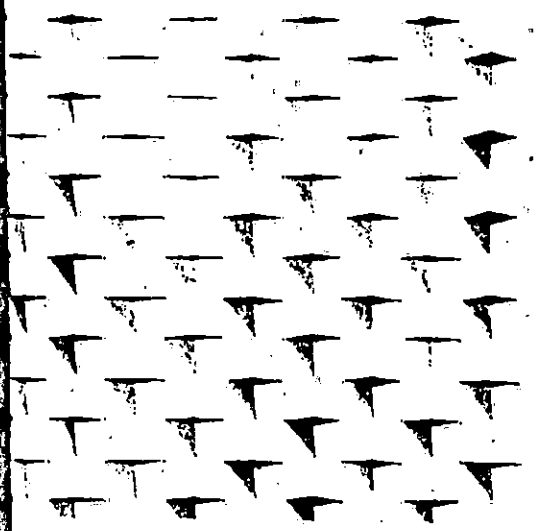


H



I

RIATIONS WITH CUTS



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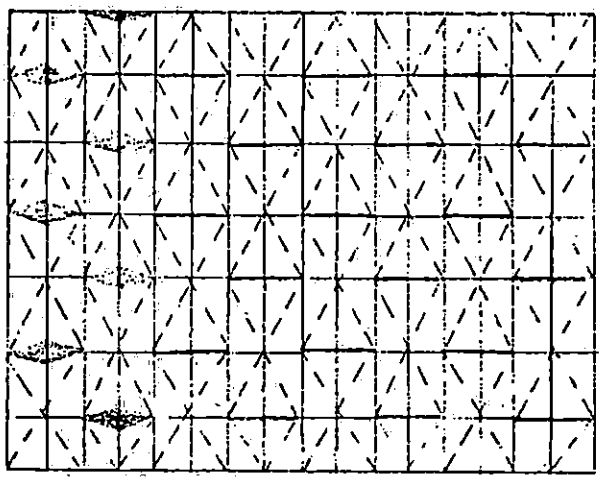

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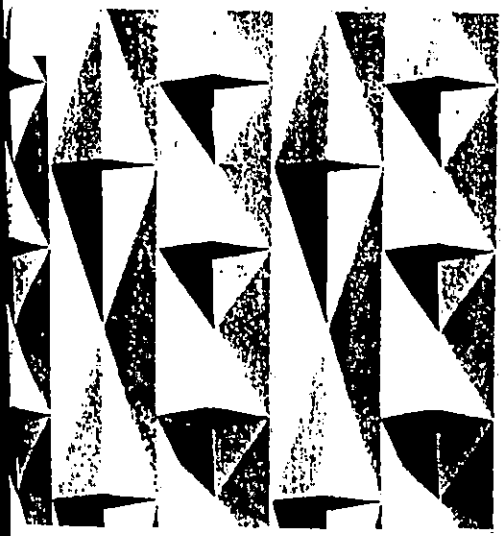

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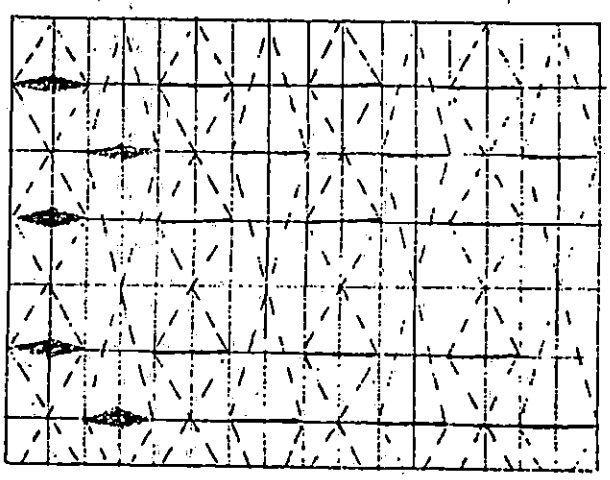

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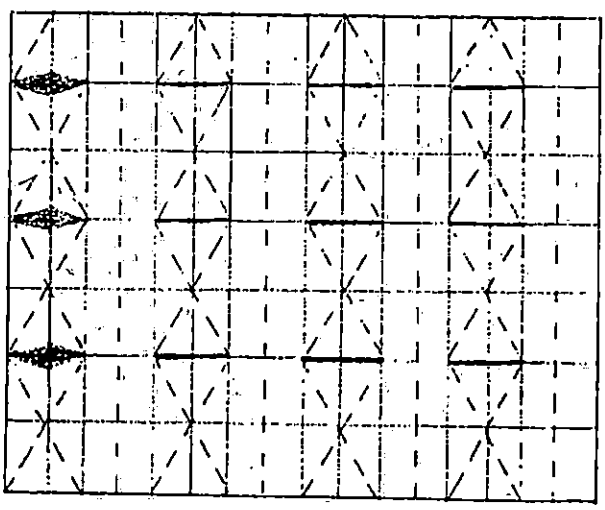

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1. Victoria Bedford Betts, Exploring Paper Mache, The Dewi Press, Inc, Worester, Massachuster USA 1955, hal.11-13, 15-20, 21-28

Chapter One

INTRODUCTION TO PAPIER-MÂCHÉ

Papier-mâché is an excellent inexpensive craft medium inviting wide explorations. Today papier-mâché applies to many types of constructions from the ancient French and Oriental processes used in making pressed paper bowls and trays, to pulp and paper strip modeling, using paper alone or combining paper with other materials.

Creative crafts follow no definite rules since processes vary with individual tastes and discoveries. Exploration, research, varied supplies, discussion and thought will all stimulate creativity.

Creating without preliminary drawings often has many advantages. A direct approach preserves the characteristics of the working materials, eliminates limitations, avoids monotony, and a tendency to copy another's design.

Artists, filling an assignment, may prefer to work from their own sketches of planned proportions and required color.

Teachers or parents can use simple demonstrations and discussions to introduce papier-mâché activities to children; but over-direction results in lack of enjoyment since children are rarely concerned with adult ideas of perfection. Their expression is often a simple emotional reaction to a personal experience.

Teachers, students, artists and hobbyists should consider these points when beginning or taking part in a papier-mâché activity:

1. What is the function of the craft?

2. Have you assembled the necessary supplies?

3. Can you construct a solid form; a hollow one?

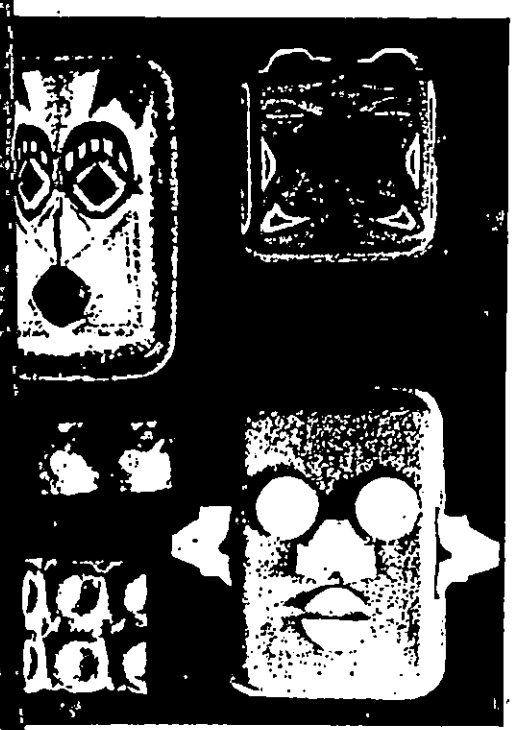
4. Can you speed or simplify the construction?

5. Will you obtain texture with paper, fabrics, yarns, natural materials, paint?

6. What will you use for hair, eyes, ears, trimmings, trappings?

7. When will you add details—in modeling, in painting, in trimming?

8. How will you paint and protect the completed model?



The following chapters provide answers to these questions and many others that will arise during various experiments with papier-mâché.

Papier-mâché crafts have countless practical applications. Some suggestions are:

1. Schools—Holiday and seasonal projects, puppets and marionettes, animal, bird and human figures, dimensional illustrations and posters, rhythm instruments, gifts, as well as crafts listed for hobby, home, display and theatre.

2. Hobby—Gifts, containers for dry foods or foliage, trays, costume jewelry, doll-house furniture, toy towns, figurines, lamp bases.

3. Home—Toys, games, tree ornaments, party favors, home and table decorations, gifts.

4. DISPLAY—Mannequins and models, flowers and foliage, dimensional backgrounds, figures.

5. THEATRE AND TELEVISION—Masks, headdresses, stage properties, puppets, marionettes.

Hospitals, recreation centers, camps, churches, play schools and other groups actively interested in the creative crafts can adapt any of these projects to their needs.

An activity plan will stimulate you and be a motivation for improvement and satisfaction. Here are some suggestions:

1. Organize materials and equipment.

2. Let fantasy be your subject matter guide or compile a photographic file of many subjects to study when the real thing is not available.

3. Encourage independent thinking and resourcefulness.

4. Let growth, not perfection, be your concern during your explorations.

5. Develop work habits and originality through creative experiences.

6. Always try an activity before presenting it to others. Show simple examples of basic constructions as well as variety in completed crafts.

Photograph, courtesy of Wm. H

Chapter Two

MATERIALS AND EQUIPMENT

Anyone can create if the proper stimulation is provided. Materials, in themselves, are inspiring and, since experiences in many materials encourage creative growth, a wide selection of adequate materials and required working tools are necessary for motivation and development.

Essential Materials

Essential materials for most papier-mâché crafts are few and inexpensive.

Newspaper.

String and scissors.

Paste and paint.

Optional Materials

Optional materials include many kinds of supplies and offer more opportunities for varied activities.

Papers:

Newspaper, tissue, crepe, unprinted news, brown wrapping, towels, metallic, cardboard, colored construction, corregated, stencil papers, lace doilies, paper bags, egg and apple carton dividers.

Fasteners:

Rubber bands, string, assorted wire, straight pins, safety pins, stapler.

Adhesives:

Masking tape, gummed tape, adhesive tape, school white paste, wallpaper paste, glue, cement.

Tools:

Rulers, pliers, scissors, brushes, sponges, potatoes and sticks for printing, rubber spatula, saws, hammers, nails, sandpaper, needles, thread.

Strengthening Materials:

Wire, wood, metal, cardboard, plaster of Paris, powdered clay, sawdust, salt, sand, asbestos powder, buckram, cloth strips and scraps.

Cores, Frames, Armatures:

Chicken or turkey wire, baling wire, cartons, crates, tubes, dowels, wood scraps, bowls, fruits, vegetables, gourds, balloons, modeling clay.

Trimming Materials:

Cotton batting, felt, fabrics, metal foils, flowers, ribbons, feathers, bells, beads,

buttons, shells, styrofoam, lace, sequins, watch parts, and other discarded or natural materials.

Art Supplies:

Tempera paint, powder paint, water colors, crayons, modeling clay, finishing varnish, shellac, plastic spray, liquid wax.

Discarded and natural materials are of special value when collected by the student or hobbyist rather than the instructor. Then each will be stimulated by the possibilities of the materials which captured the individual's imagination. Groups should be encouraged to contribute to a general collection.

Uses of Materials

Some suggested uses of inexpensive, natural and discarded materials are helpful for beginners.

Beads, Buttons:

Eyes, costumes, jewelry, headdresses.

Cardboard Cartons:

Cars, houses, miniature furniture, hollow figures, costumes, hats, toys, games, shadow boxes.

Cloth:

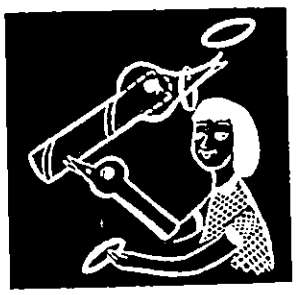
Costumes, for strengthening armatures, stage properties, house furnishings.

Dowel Rods:

Supports, cores of figures, marionette controls.

Inner Tubes:

Puppets, toys, games.



Mailing Tubes:

Puppets, figures, engines, buildings, trees, lamp bases, ornaments, favors.

Natural Materials:

Cores of figures, stage properties, trimming materials.

Paper Bags:

Hats, masks, costumes, puppets, paper sculpture.

Paper Cups and Plates:

Mobiles, stabiles, hats, costumes, masks, figures, favors, toys, games.

Wood Scraps:

Dolls, wheels, stick printing, features, favors, supports, buildings, toys, games.

Wire Scraps:

Cores, frames, mobiles, stabiles, supports, trimmings.

Equipment

Equipment to improve working conditions is not confined to papier-mâché, but applies to other art activities.

Personal Needs:

Smock, apron or a discarded shirt.

Working Surfaces:

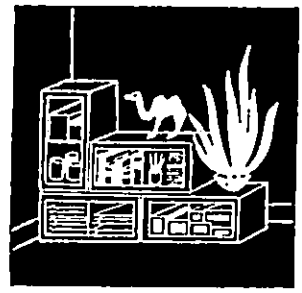
Newspaper or oilcloth to protect furniture, sheets of masonite to provide large table tops.

Storage Furniture:

Bookshelves, a discarded cupboard, apple boxes or orange crates.

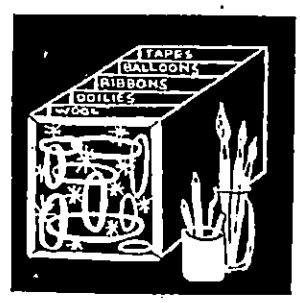
Storage Containers:

Individual work boxes or market bags for unfinished crafts, shoe boxes, cracker cans, gift cartons, shoe bags, file folders or large strong envelopes, cartons with cardboard partitions for small articles. Label each container.

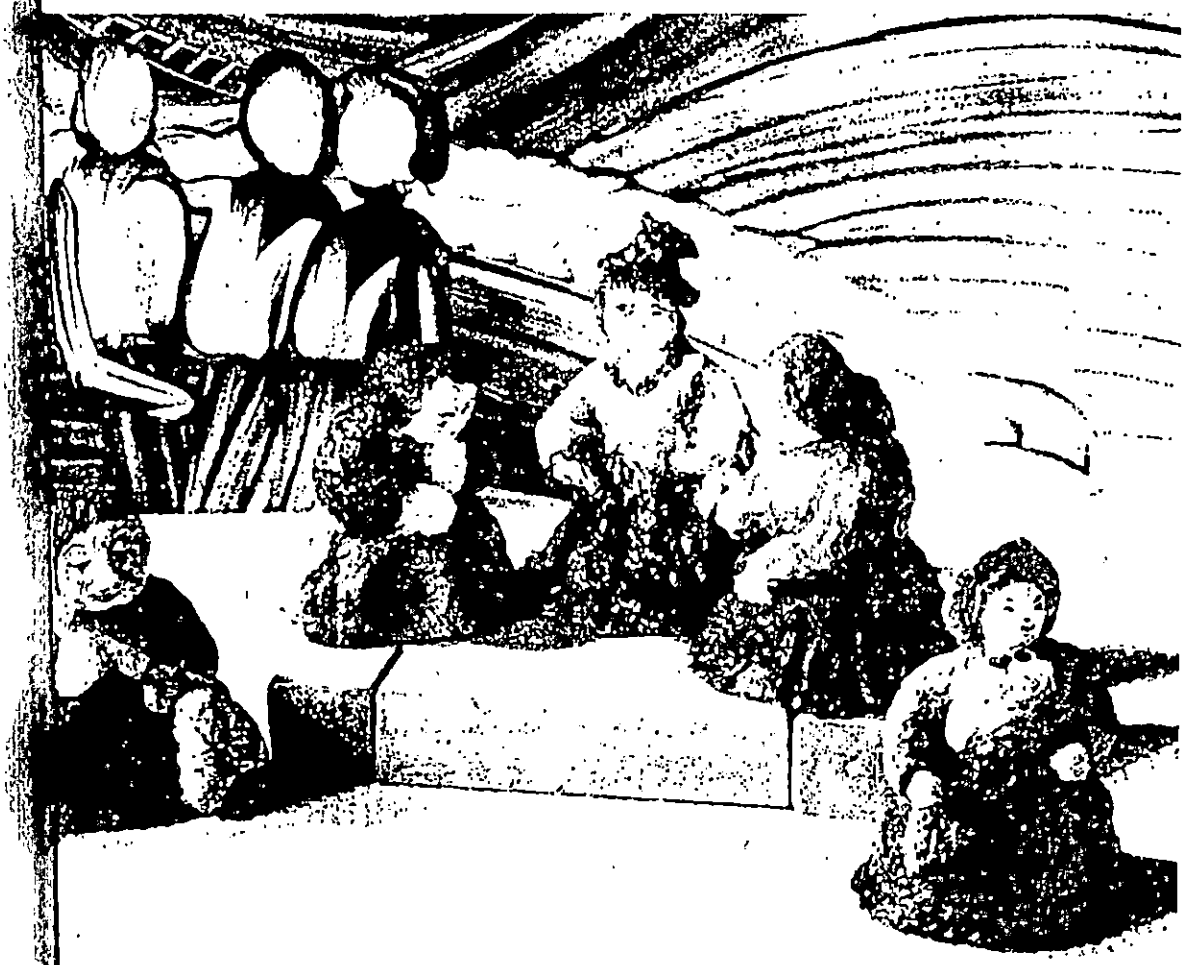


Art Supply Holders:

Glass jars for paste, paints, water, shellac and brushes—cans or boxes for broken crayons.



Good work habits and responsibility should be developed at home as well as in a club or classroom. Time should be planned for cleaning up and each should do his share. A group can assist in the organization and even in the distribution of materials and equipment. It is wise to have them available and in easily accessible places.



Chapter Three

BASIC CONSTRUCTION EXPLORATIONS

It is essential that beginners explore the possibilities of wet and dry papers since all papier-mâché crafts involve one or more ways of working with paper. Newspaper is best for practice work. Later you may wish to work with stronger papers or those that have texture.

Papier-Mâché Pulp

To make enough pulp for several fist-sized models, fill a pail with small pieces of torn paper, cover the paper with water and let it soak overnight. Knead the soaked mass, then squeeze out the excess water by straining the pulp through a sieve or stocking. Add enough paste to hold the mixture together and model the pulp as you would clay. If the pulp tends to crack while drying, press it together and define the modeling on the second day.

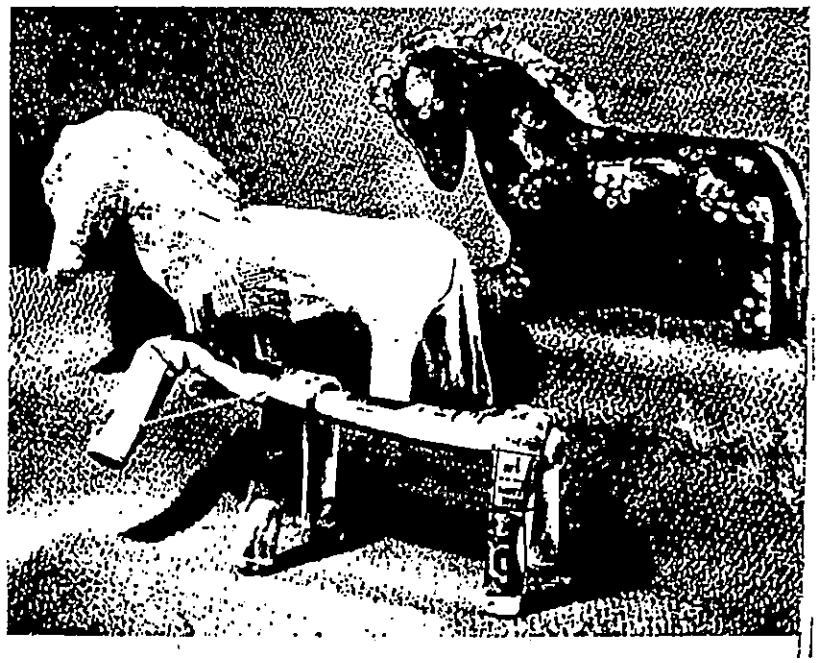
Pulp can be mixed with sawdust, salt, sand or asbestos powder. These dry ingredients will require additional paste.

Soft paper napkins or cleansing tissues, generously covered with paste and crumpled, make a softer pulp that is useful for detailed work.

Dry papier-mâché compounds, used by taxidermists and doll hospitals, need water or water and adhesive added to make a strong pulp which can be sanded or carved when dry.

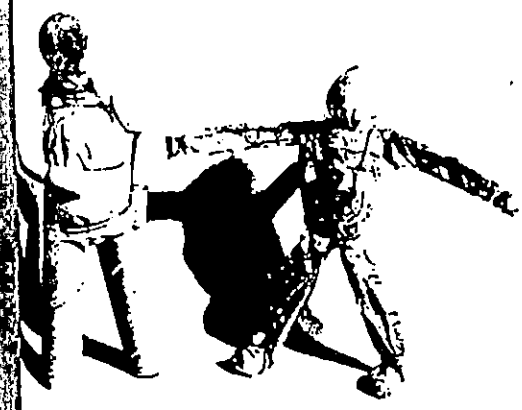
Coils and Twists

To control paper and make it serve your purpose, practice with dry sheets of newspaper which do not tear as easily as wet ones. Strong coils are formed by roll-



ing a few sheets toward a folded edge. Insert a layer or two of cloth or a piece of pliable wire for added strength. With string or rubber bands, fasten each coil in the center and at each end.

Twists of paper can be bent into more graceful positions than coils. Roll the paper diagonally for twists, or crush it and give it a slight twist. Insert a piece of wire for strength and flexibility. Wrap the entire length with string to keep the paper from springing apart.



Balls or Wads

Crumple dry paper by pushing the edges of the sheet to the center. Squeeze and shape the wad before adding a string tie. Small sheets of paper with paste spread on one side can be crumpled and used without a tie. Paper bags filled with loosely crumpled papers can be squeezed to change the shape of the wad.

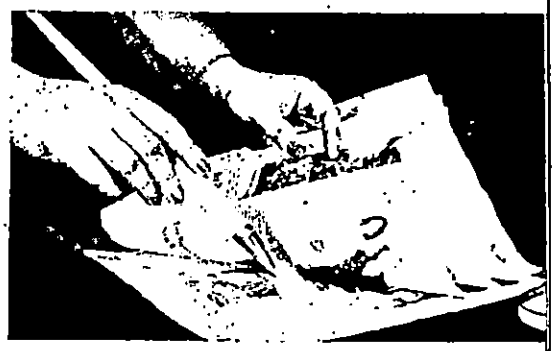
Some constructions can be made of soft wads, while others will need to be built of firm wads. For example, a roast turkey, planned for a stage property, need not be as strong or solid as a doll which will be handled by youngsters.

Pasted Paper Layers

Spread paste generously between layers of dry newspaper to produce a strong thick pad to cut and model while damp. The number of layers is determined by the size and function of the craft. Beginners can try six or eight layers for small shapes, and more for larger ones. Add strength by pasting an occasional layer of cloth between the paper sheets. To save paste, cut a paper pattern of the shape to be modeled by the

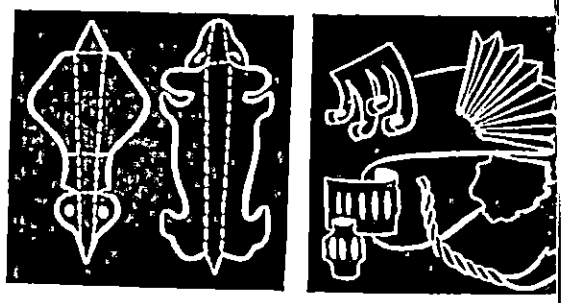
layer method. Place it on the dry newspaper layers and cut them guided by the pattern. Or with a colored crayon, draw the outlines of the required shapes on the top sheet of newspaper before the papers have been pasted together. After pasting the sheets together, cut out the shapes within the crayon outline so the crayon marks will not interfere with the painted surface decoration.

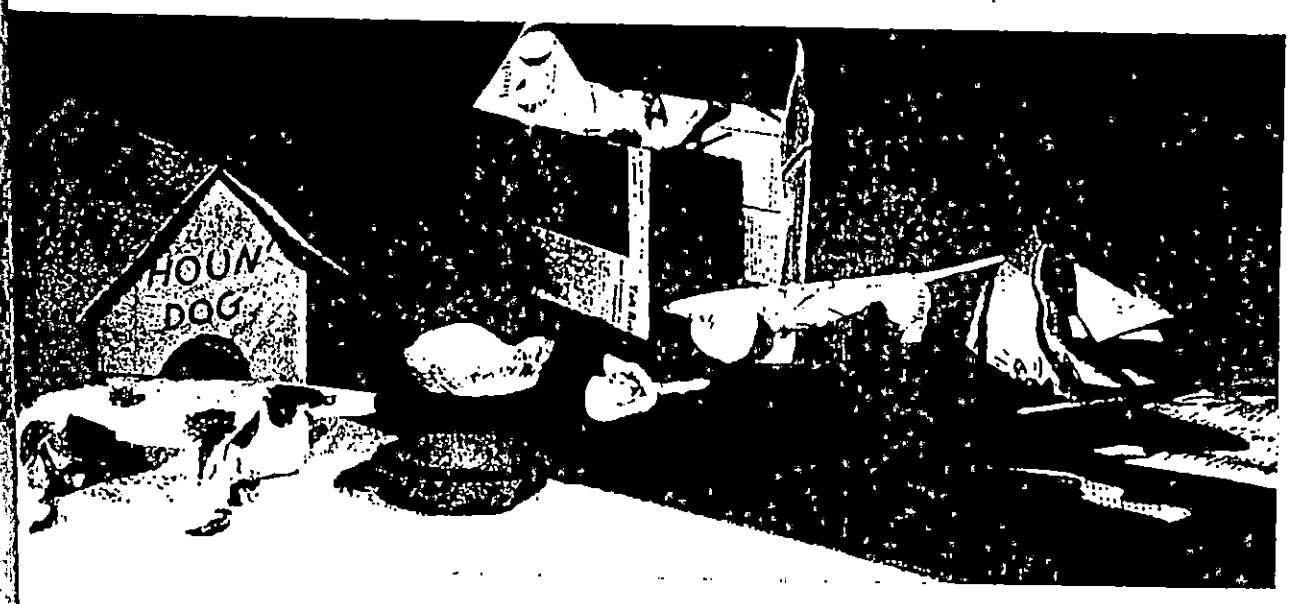
Pasted paper layers must be bent and shaped while damp, so allow time to model them. Do not spread the paste until you have planned your pattern.



Sculptured Papers

Fold, cut, curl or tear various dry papers for sculptured trimmings. Strengthen thin novelty papers with pasted backings of cloth or paper. Include hinge-flaps when cutting paper features or costume parts to aid in fastening the additions.





Photographs, courtesy of Hilda Ruth, Park Ridge, New Jersey

Working with Newspaper Strips

Tear paper from the fold down or along a ruler's edge. The width of the strip is determined by the area to be covered. Whip school white paste to a creamy consistency for easy spreading and greater coverage. For fast drying, cover only one side of a dry strip with paste. For slower drying, pull the strips through a dish of paste. Strips can also be applied between coats of paste. Strips dipped in liquid starch will add stiffness between the pasted paper layers. Torn paper pieces can be used instead of strips.

Working with Novelty Papers

Cut any papers which do not tear easily. Heavy papers often require more paste and more time to stretch. Corrugated and metallic papers

may need cement or glue instead of paste. Papers which tend to spring and curl can be tied in place with rag strips during the drying process. Tissue and other thin papers are easier to handle when not too moist. Crepe paper strips can be used dry for a taut binding. A textured paper provides an unusual surface when used for the last layer.

Working with Paste

Be generous with paste to obtain a smooth top surface. Cover one entire side of the paper to let it stretch evenly. While applying a paste-covered strip, pull the paper gently and rub the surface to eliminate wrinkles or air pockets. Count the number of layers or observe the distribution of paste and paper by alternating printed newsprint with colored comics or with paper towels.

School white paste will spread easily and go further if it is beaten before use. Fingers, a stiff brush or a spatula will spread the paste. Keep a damp cloth handy for wiping sticky hands.

Photograph, courtesy of Cooper Union, New York City.

Padding

Cores of paper, wood, wire or other materials can be built up with dry or damp crumpled wads; with sections of pasted

layers, or with cloth or cotton batting which has been fastened with string or tape to the core. A smooth firm surface is obtained by adding a few layers of well-pasted strips.

Working with Objects to be Removed

When working over clay models, dishes, fruits, vegetables, bottles, rubber balls and other objects, use a layer or two of wet paper to cover the form and keep the pasted paper from sticking to it. Then add pasted pieces or strips, using a different kind of paper for alternate layers. Six to ten layers are usually enough for small forms: more layers are needed for larger and stronger ones. When the pasted paper is dry, lift off the shell. Split a shell that completely covers an object and fasten the halves together with more paste-covered strips.

Any area of the shell that was next to the core object can be finished by adding a layer of pasted paper. Rough edges of paper shells (bowls, masks, etc.) can be finished with overlapping pasted strips.

Working with Breakable Objects

When covering glass, brittle plastic, balloons or thin-shelled gourds, use enough layers of pasted paper to make a strong shell.

Papier-Mâché Casts in Plaster Molds

Papier-mâché masks, puppet heads, and other crafts can be made with paper pulp or pasted strips which are pressed into a plaster mold. Vaseline, baby oil, or two layers of wet paper will keep the paste from sticking to the plaster. Pulp halves can be cemented together while halves of paper shells can be fastened with pasted paper strips.

Let these guides be beginning experiences. Have you tried cores of bunched cloth or fistfuls of excelsior? Is gummed paper available—for strong speedy bindings? Continue to explore the possibilities offered by many other materials.

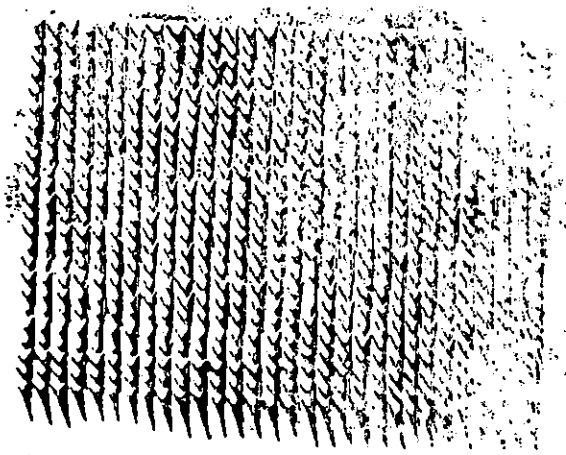
Relief

As in the previous exercises, a surface is to be brought to life by cutting into it, except that the cut-out fo
are not folded down. The illustrations on the next page show that even a multiplication of identical forms
produce quite a striking plastic effect.

Note the importance of light in this type of work. In each case, light must be treated as an important com
nent. The scope of the game is considerably widened by including light. The photographs in this volume h
tried to bring out this aspect. The examples have been shown in the 'proper light', i.e. they were lit up to b
out their special qualities as much as possible.

The most suitable material, in this case, is white drawing paper. Coloured paper is not recommended,
cause colour does not admit subtle degrees of light and shade, although there is no objection against the
of metal foil.

It is left to the reader to retrace the stages of the examples in figures 173-90



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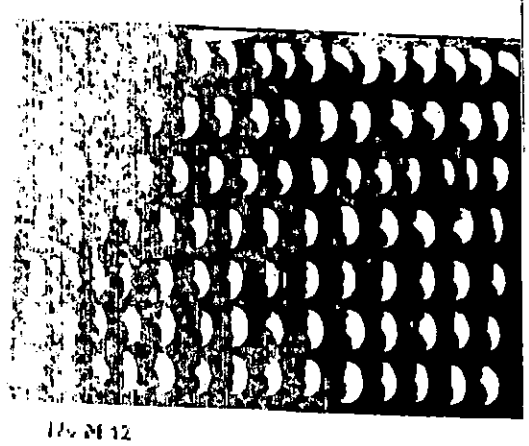

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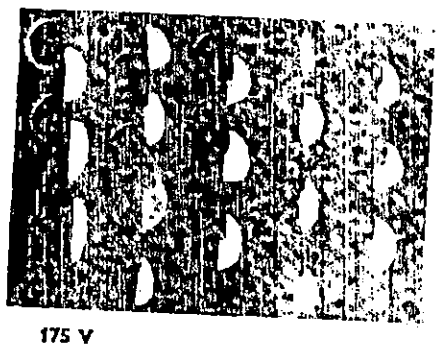

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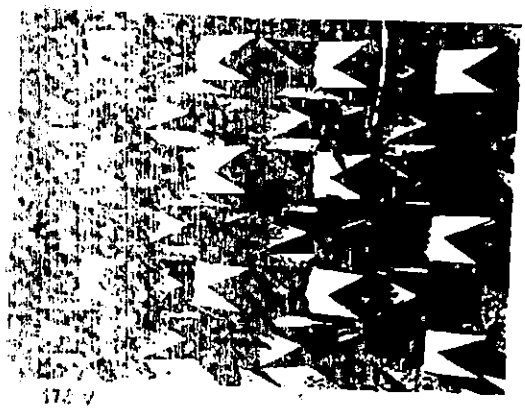

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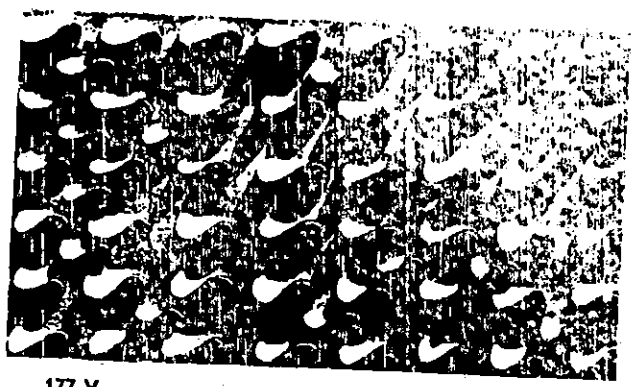

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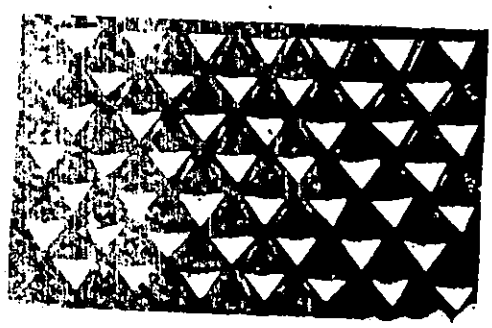

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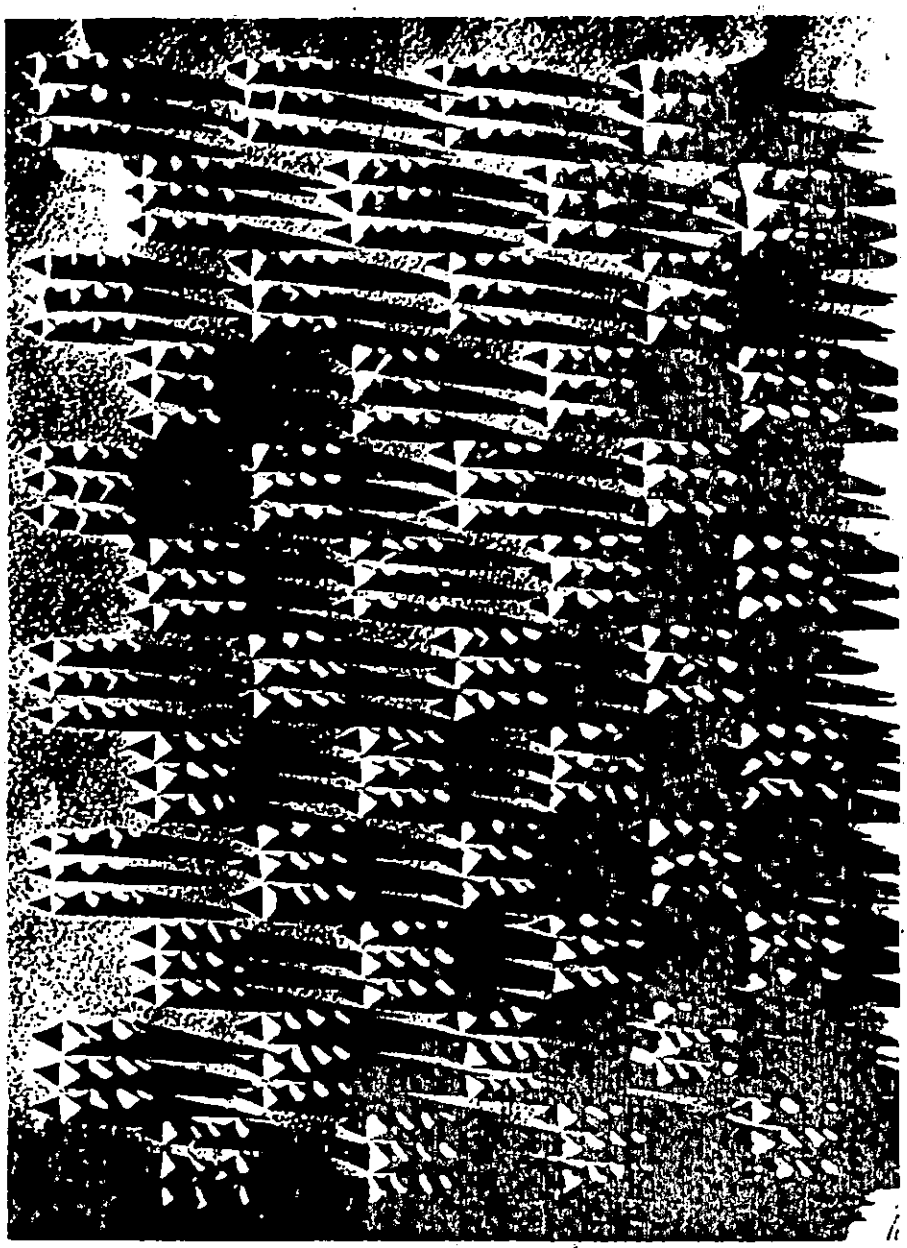

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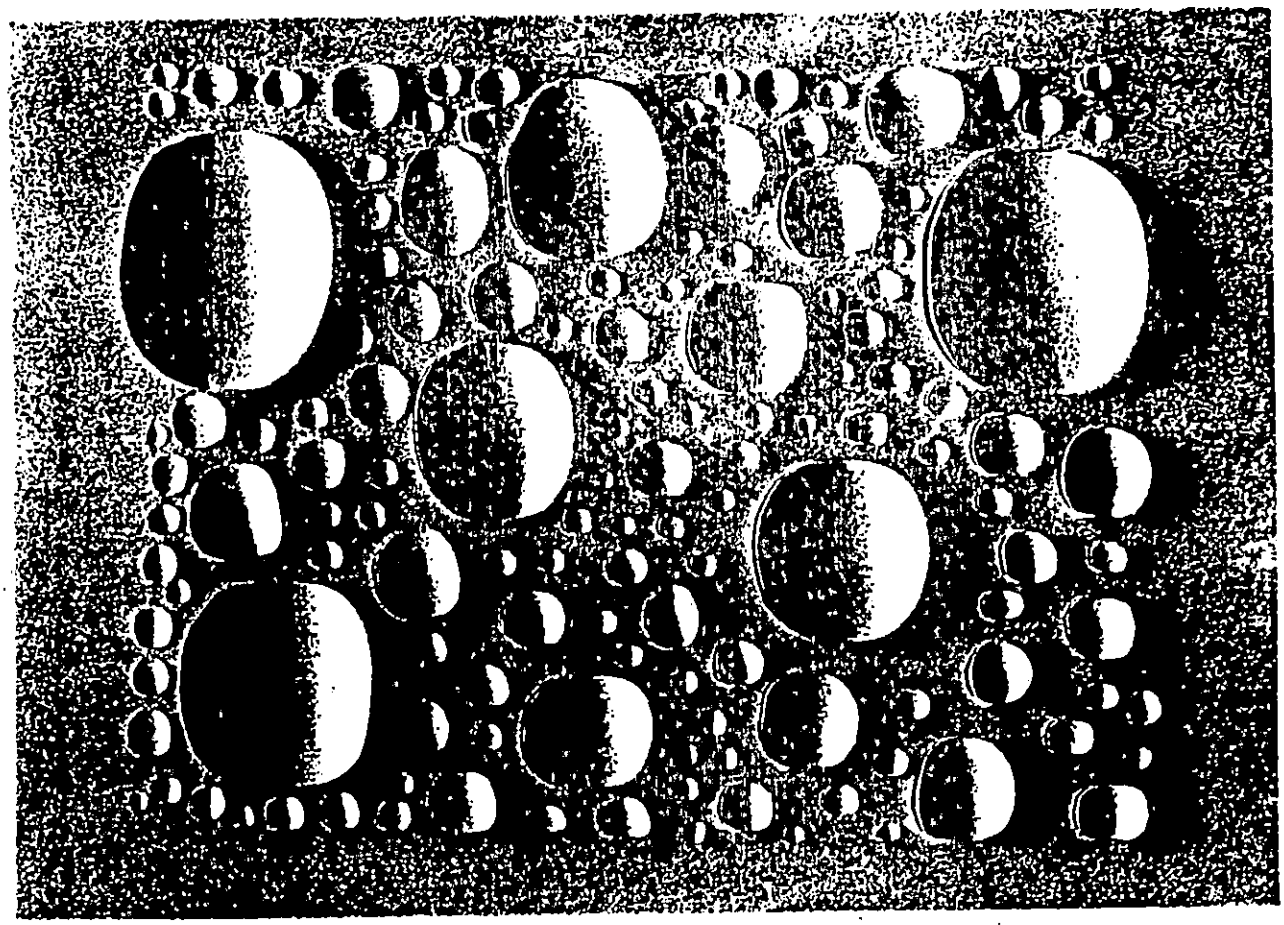

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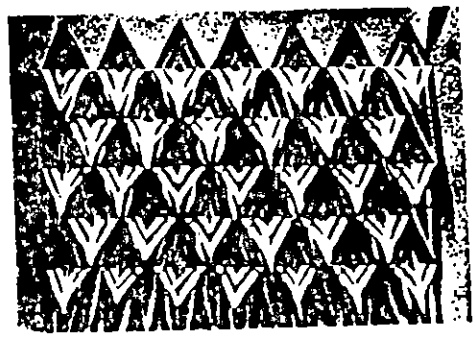
181 M 14



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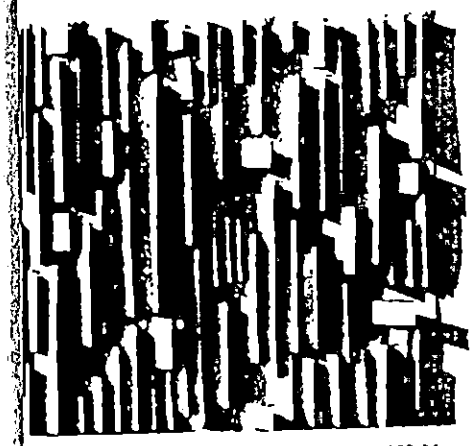

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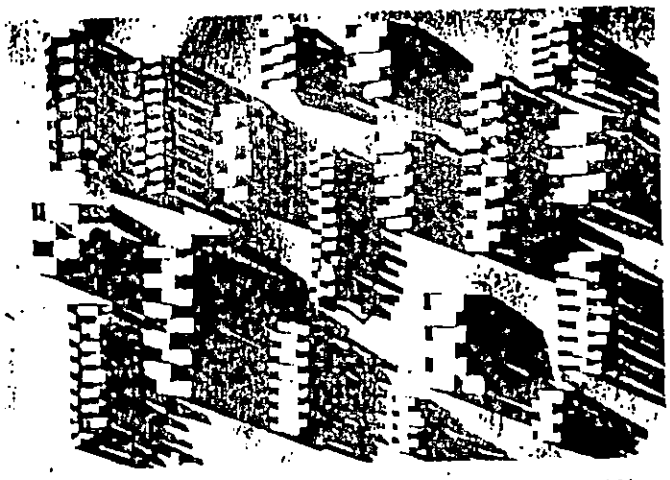

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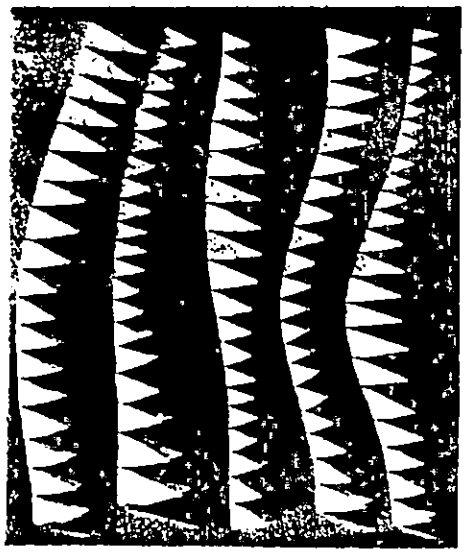

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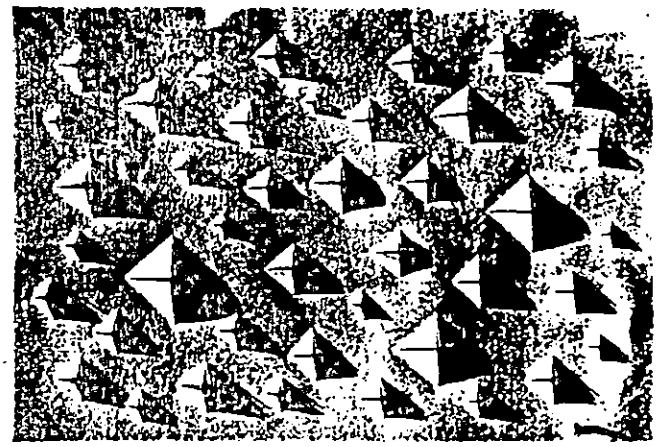

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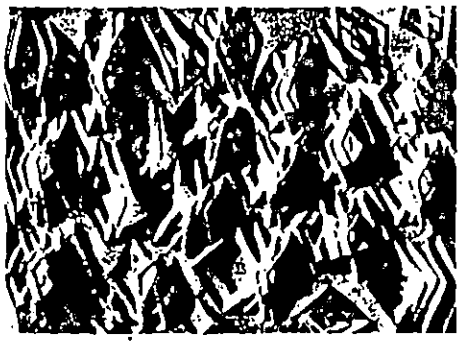

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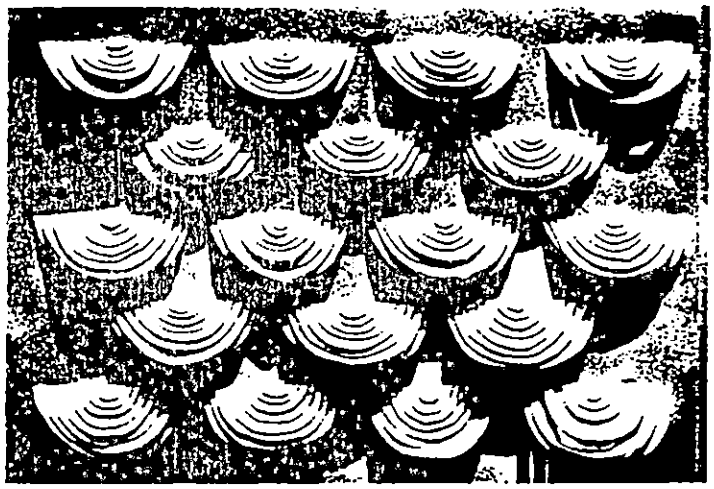

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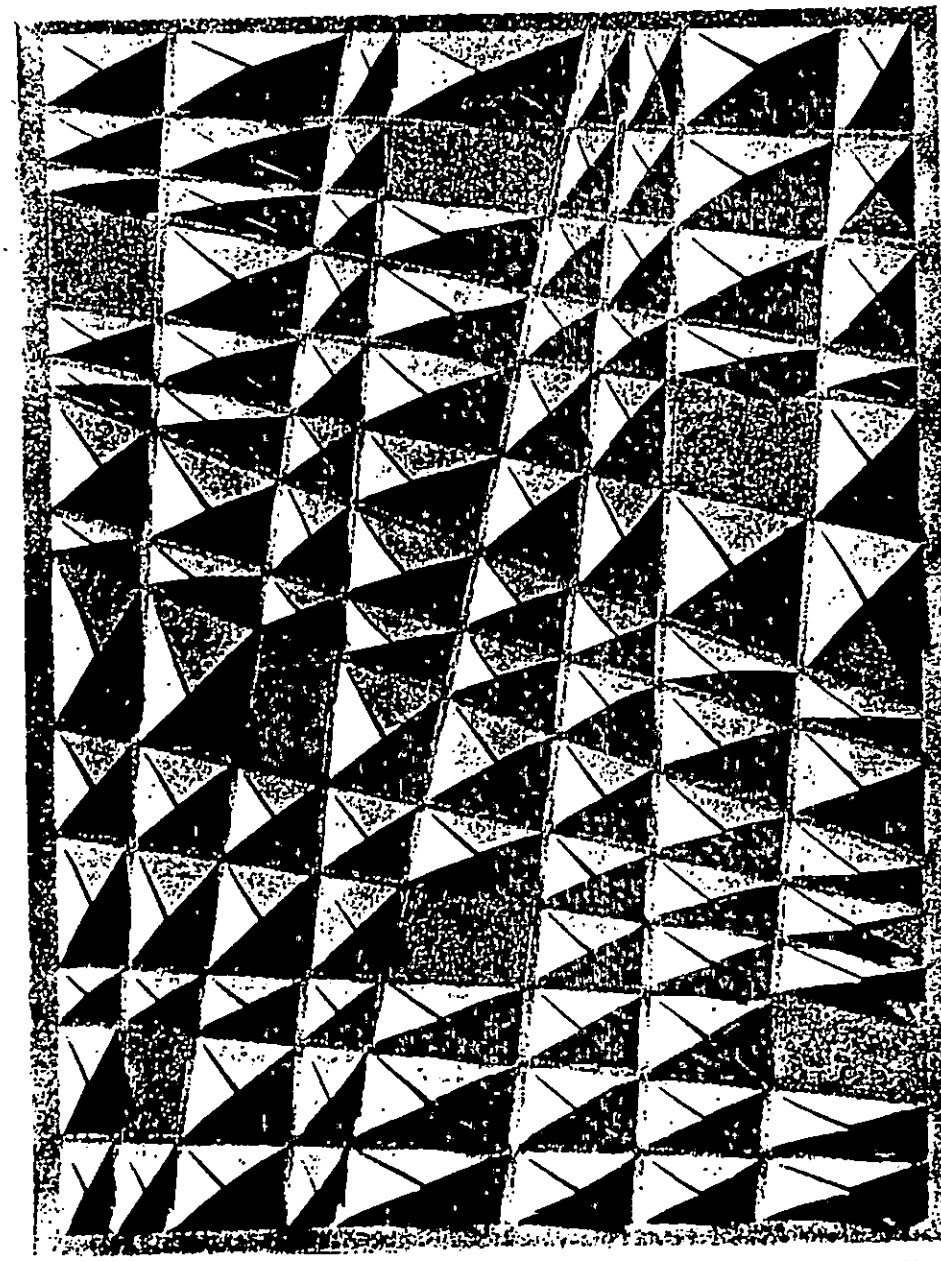

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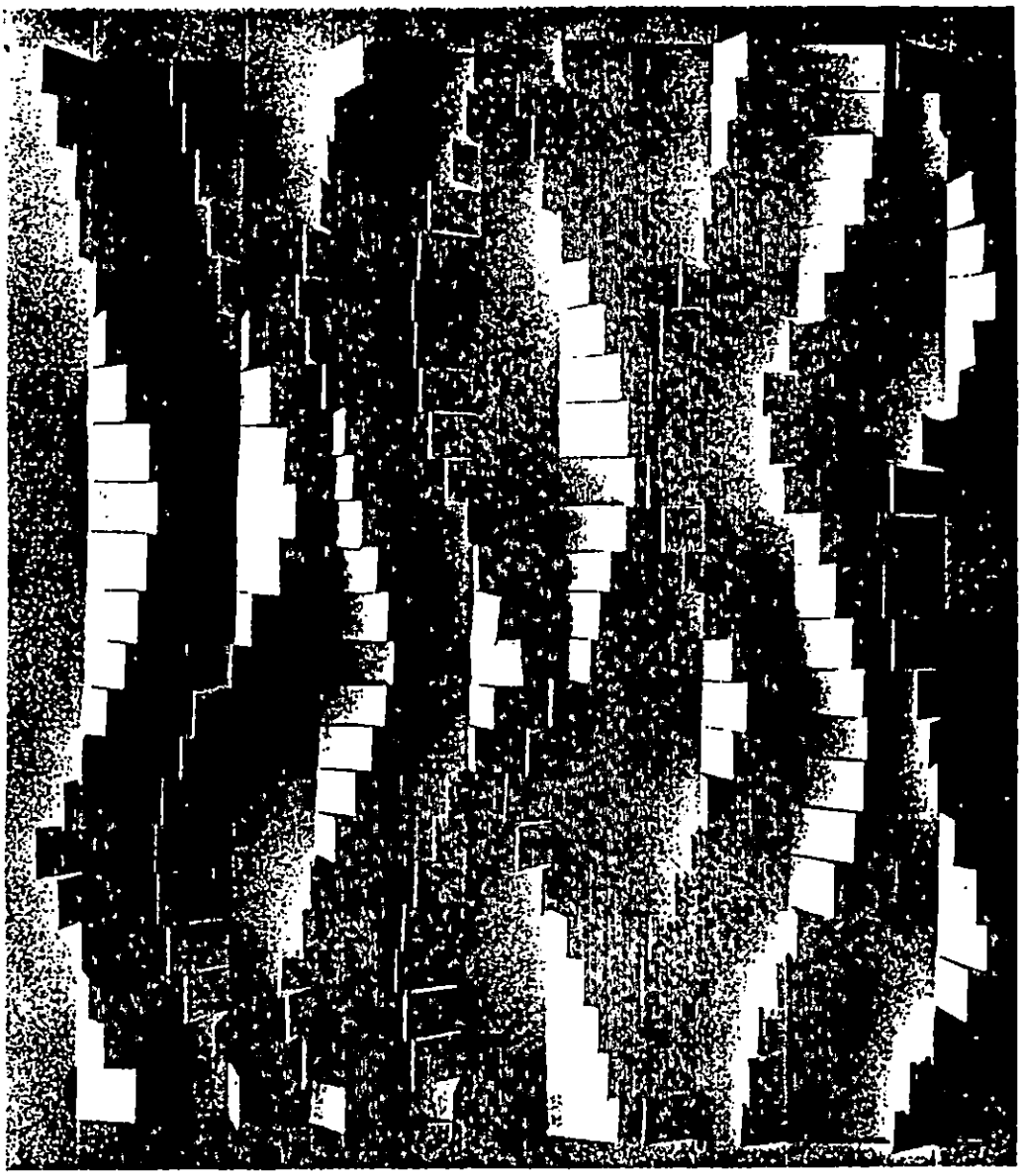

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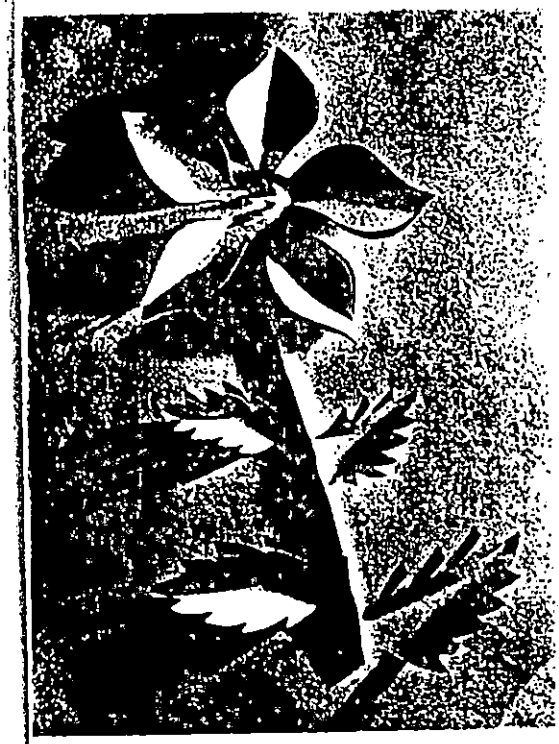
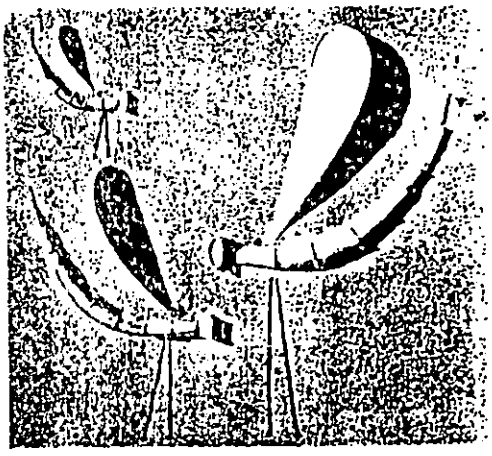


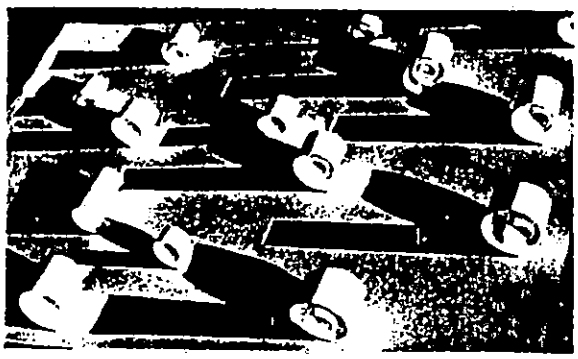
191 J 14



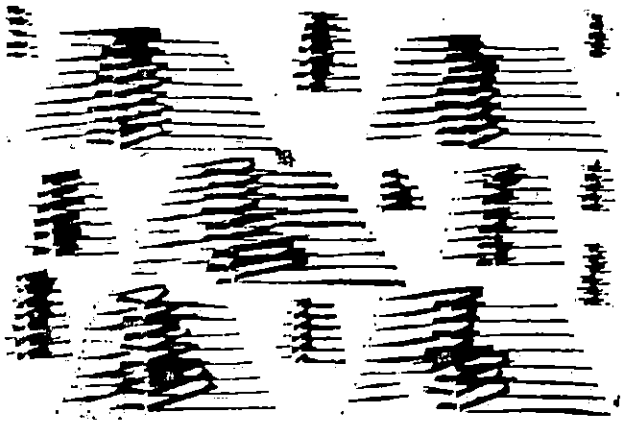
192 V

193 L

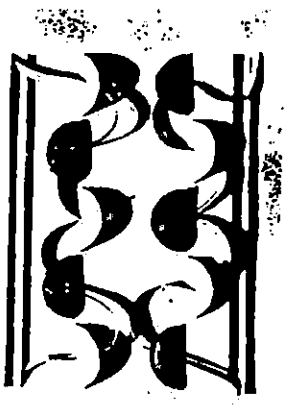
194 J 12



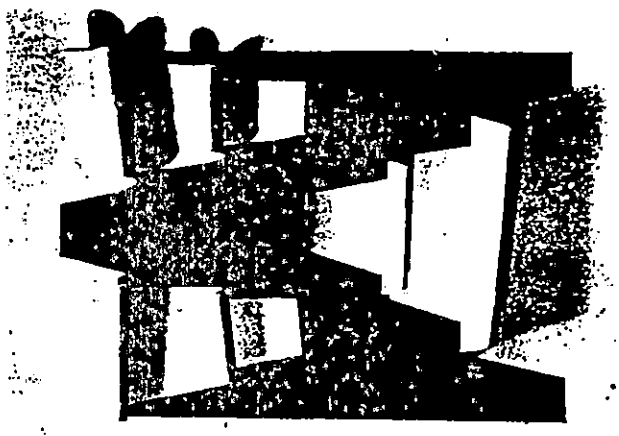
195 J 12



196 V



197 V

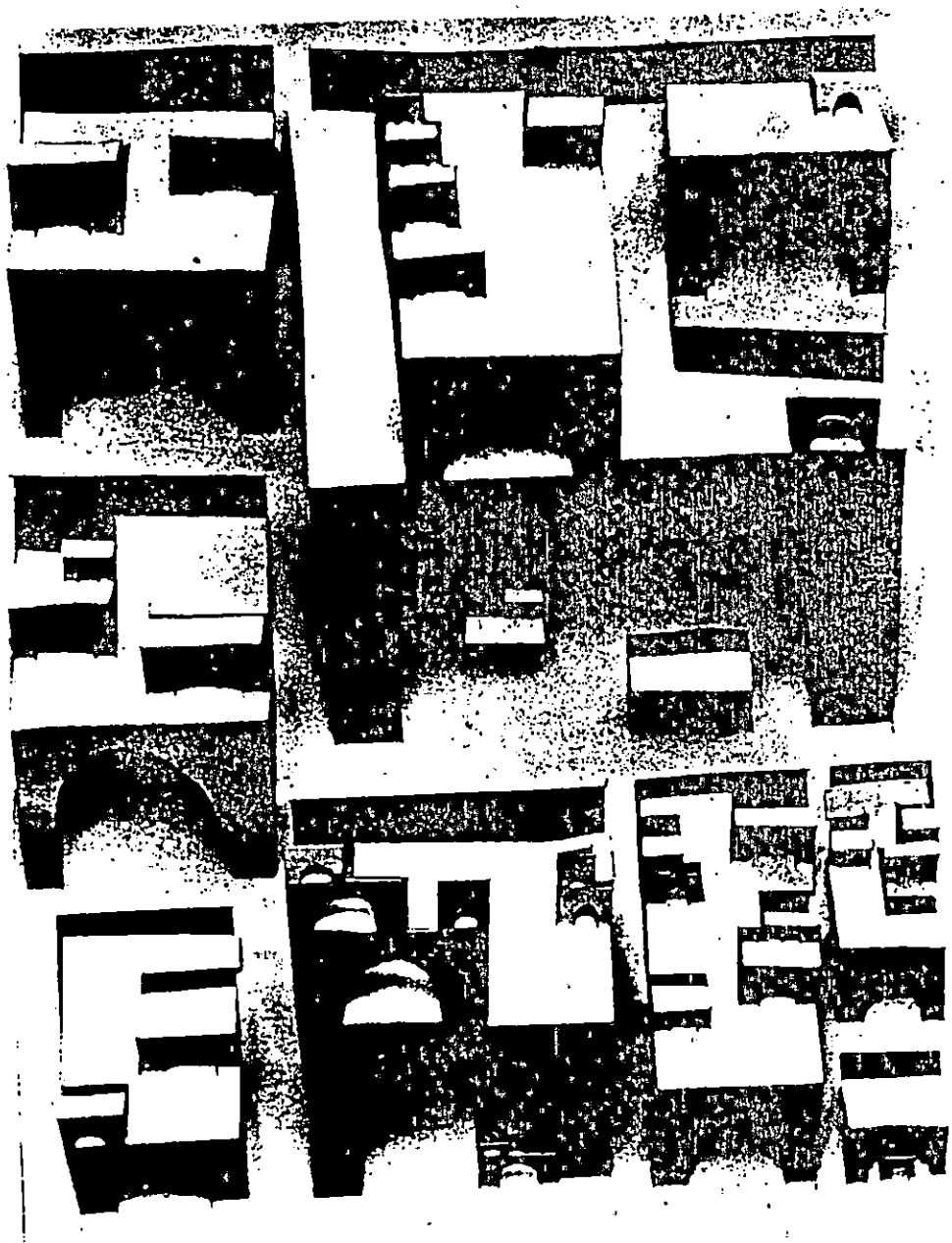


198 V

Figures 191-2: natural forms in relief

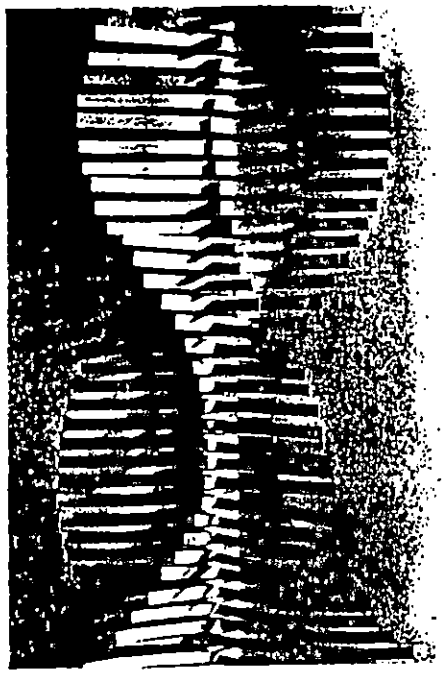
Figures 193-4: the forms, cut into and raised almost at a right angle, are standing upright. Children can build a whole city, a factory, or a forest in this manner

Figures 197-8: the forms were rolled outwards and drawn through slits

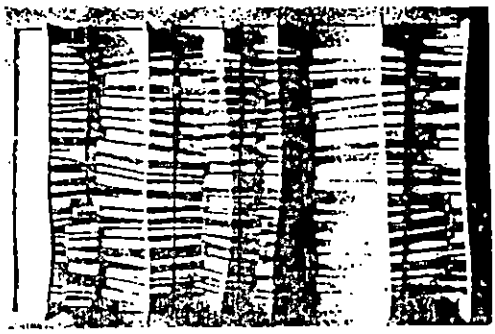


199 V

Relief on drawi
paper, made by cuttin
into and folding ou
Nothing has been ad
ed or removed



200 V



201 V

202 V

203 V

RELIEF BY INSERTING STRIPS OF PAPER

The task: A sheet of paper is to be brought to life by cuts, through which strips of paper are to be inserted, forming a definite pattern.

The rules determine whether the strips are to be cut or torn, and if they are to be of the same or different width or of a certain shape.

Figure 204: a loose, informal effect, created by torn strips

Figure 205: plaiting with strips, which have been pasted down

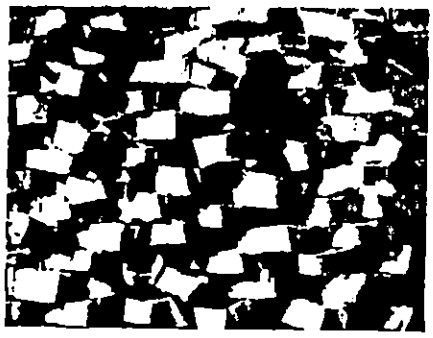
Figure 206: a severely geometric arrangement

Figure 207: diagonal slits. The strips were given one twist before being inserted

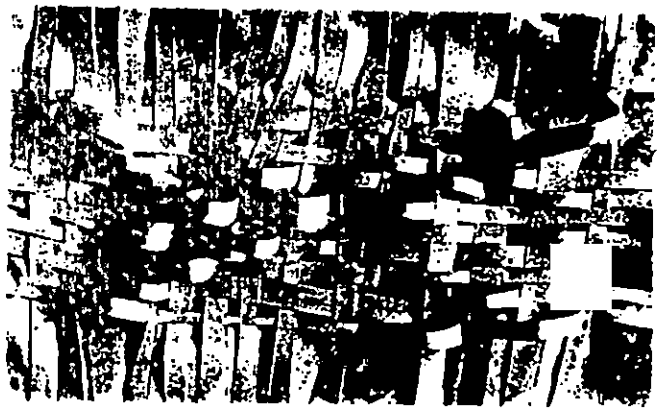
Figure 208: diagonal slits. A lively rhythm has been created by not letting all the strips rise to the same height above the surface

Figure 209: strips of paper were twisted into cords and pulled through narrow slits on both sides, thus appearing alternately in full length and in small sections

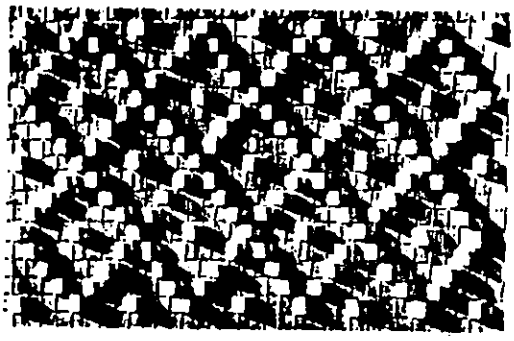
Figure 210: still a relief in character. Strips of equal size were inserted through slits made in a folded sheet of paper



204 V

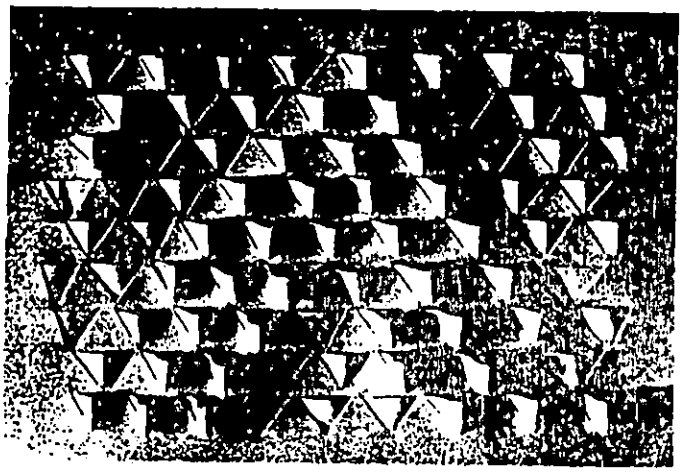


205 V

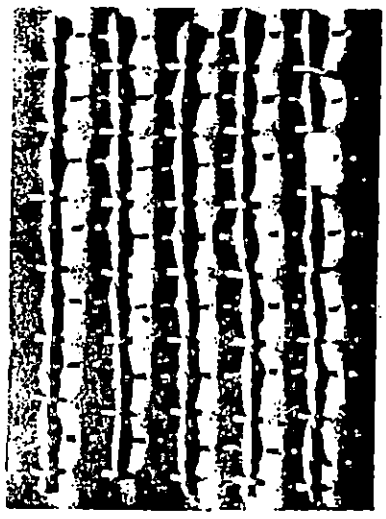


206 M 15

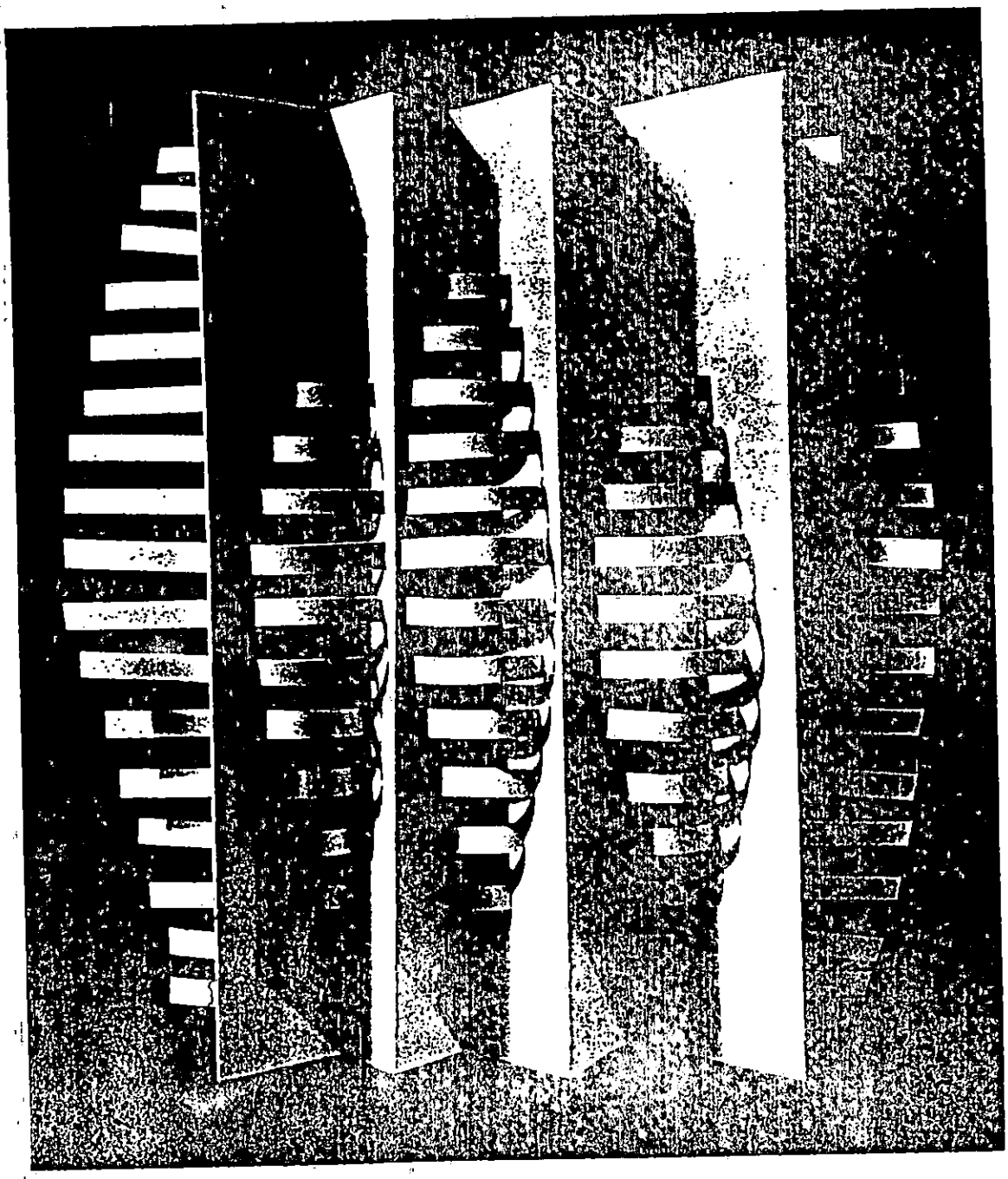
207 V



208 V



209 V



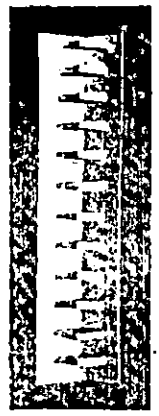
210 V

211 L

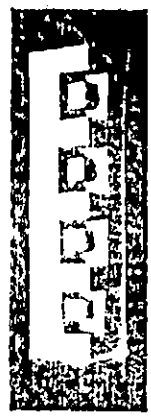
212 L

213 L

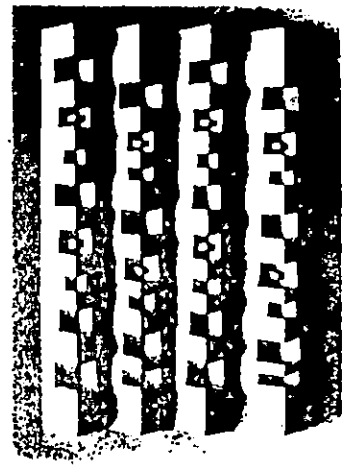
214 L



215 L



216 L



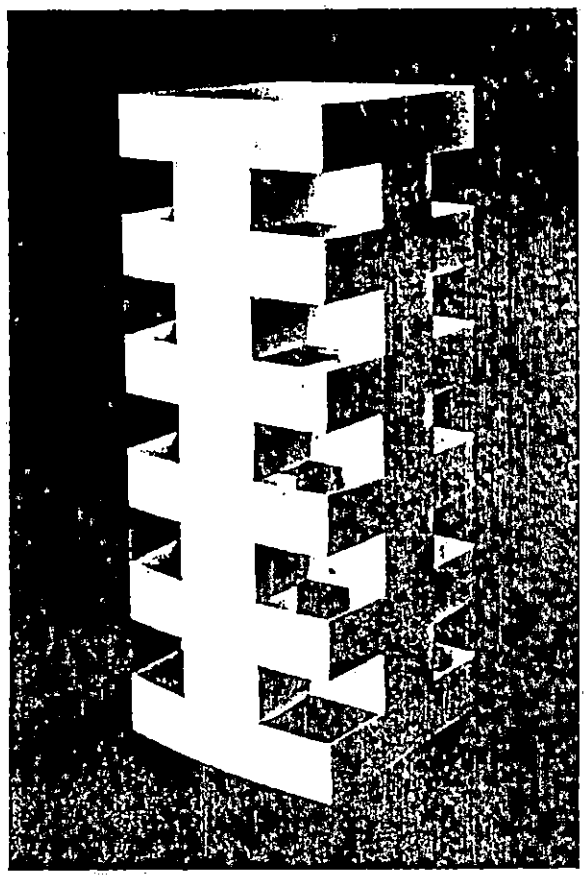
217 L

HE TRANSITION TO FREE SCULPTURE

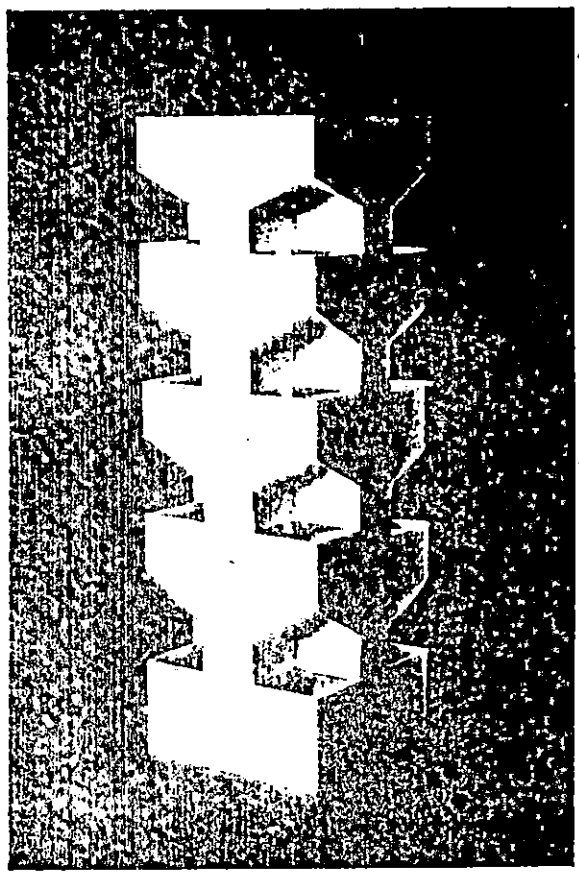
ures 211-16: narrow rectangles are folded lengthways and are cut into at right angles along the crease. The ms are then pressed in (when using cardboard, mark with a knife before folding).

ese examples form the transition from the relief to free sculpture. It is advisable to make several objects different size, and to compare them for their plastic effect. The next step leads to making rectangular dies (drawing paper).

e aim is to achieve a form of balanced rhythm



218 L



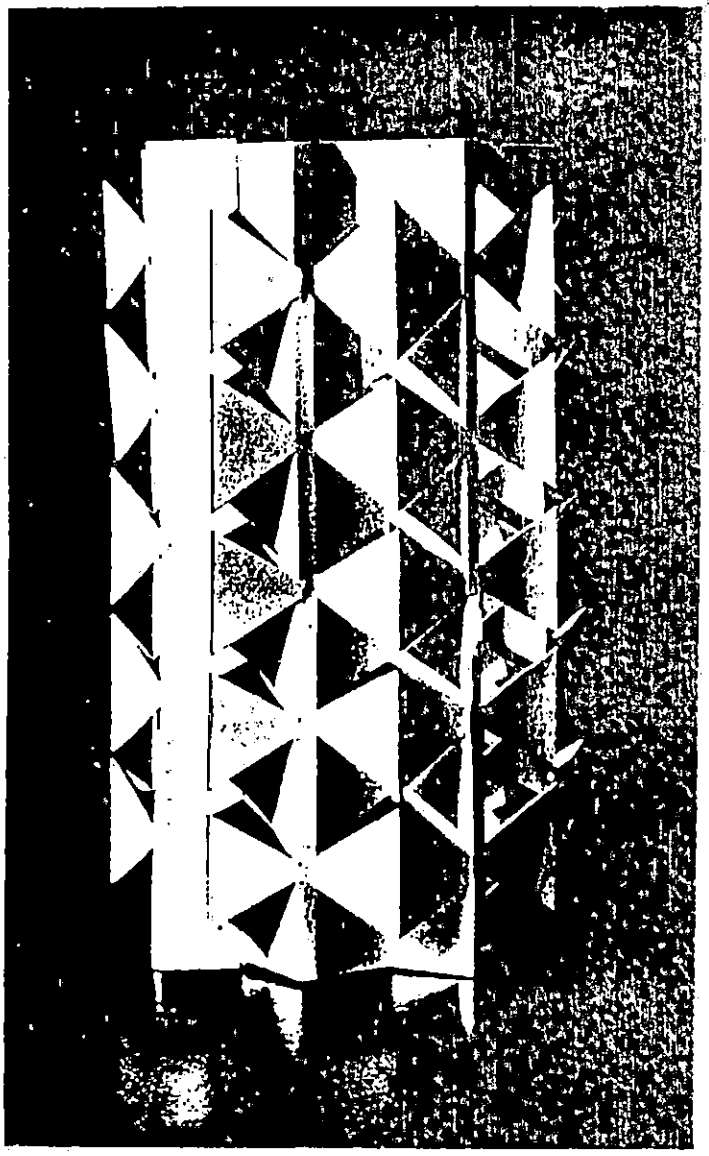
219 L

Figures 218-19: a rectangular piece of paper has been folded into a body with a square base (remember that paper has to be pasted together at one edge!). This form was built up by cutting into and pressing in al the edges

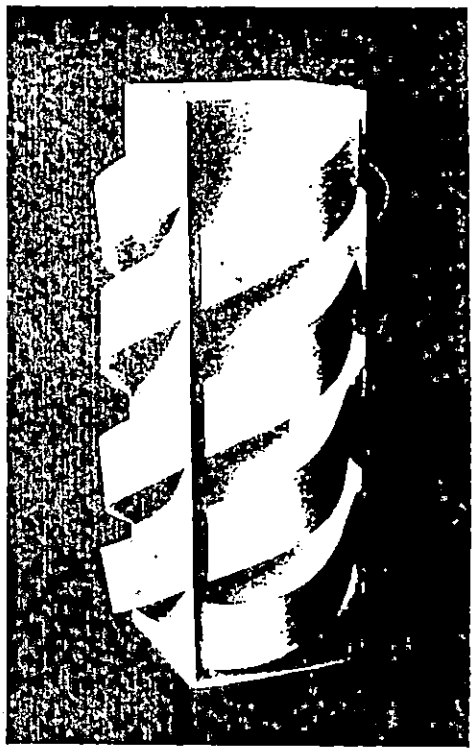
Figure 220: a similar procedure, applied to a body with a hexagonal base

Figure 222: a dramatic effect, obtained by making cuts of varying width and depth

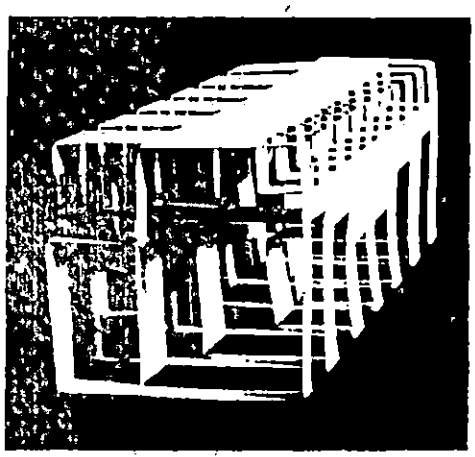
Figure 221: a simple square block made more interesting by working a strip of paper round it



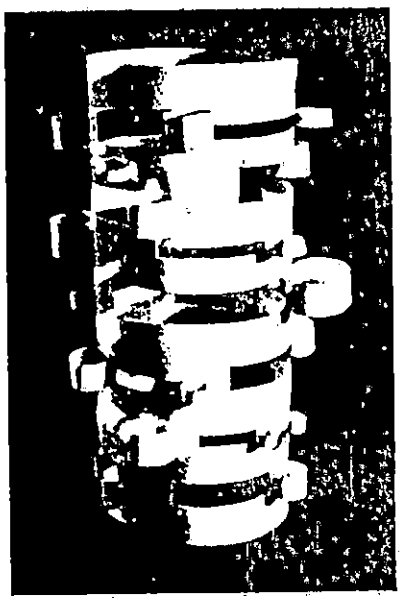
220 L



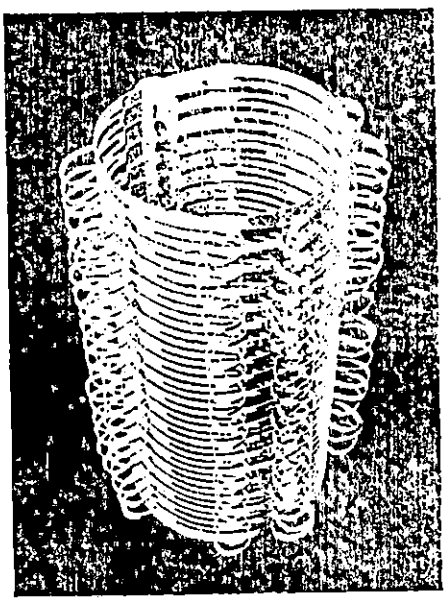
221 L



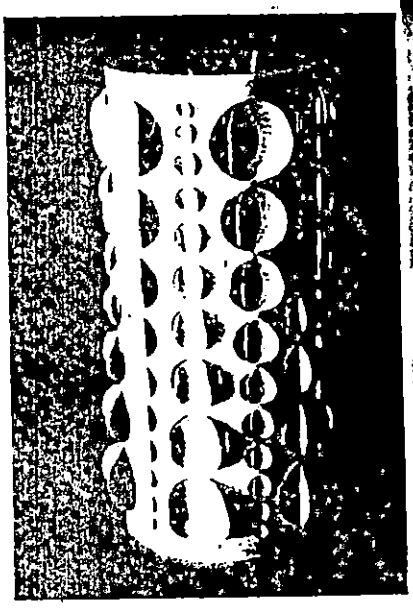
222 L



223 J 13



224 V



225 V

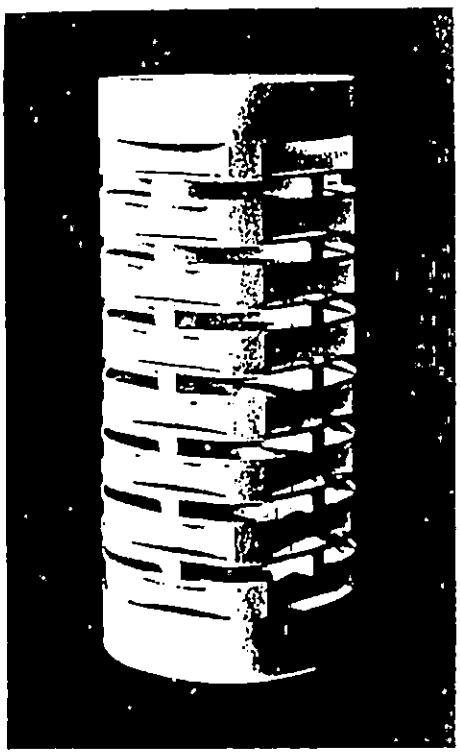
HOLLOW CYLINDERS

The two edges of a piece of drawing paper are joined to form a cylinder, first cutting into it forms, which are folded back, rolled, or pressed in. Details are determined by rules.

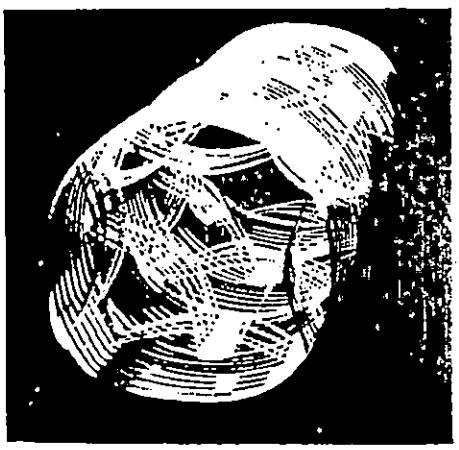
It might also be suggested that the edges be joined without paste, as in figures 224-5 and 227-8

Figure 229: emphasis on structure. The run of the ribs gives this cylinder great strength

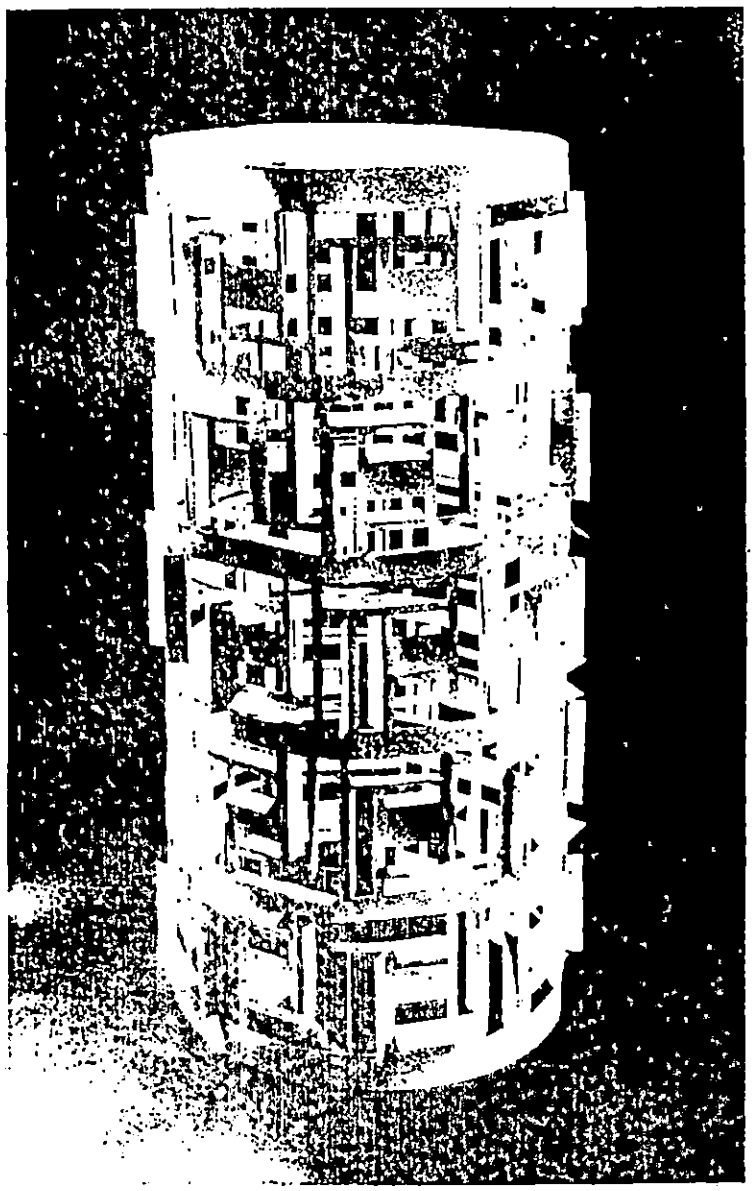
Figure 231: cylinder with vertical slits. Height and width can be varied indefinitely by pressing down or pulling out



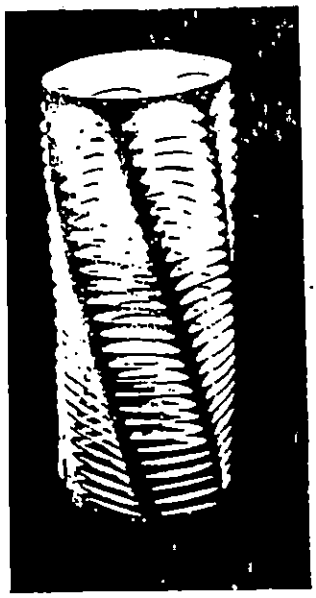
226 L



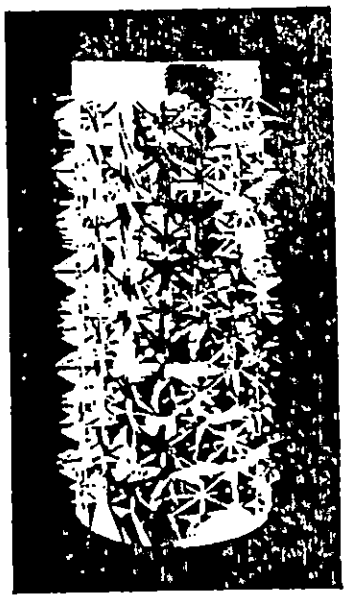
227 V



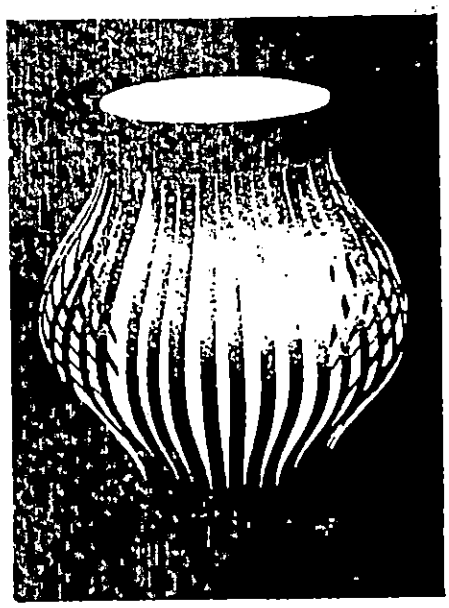
228 V



229 V



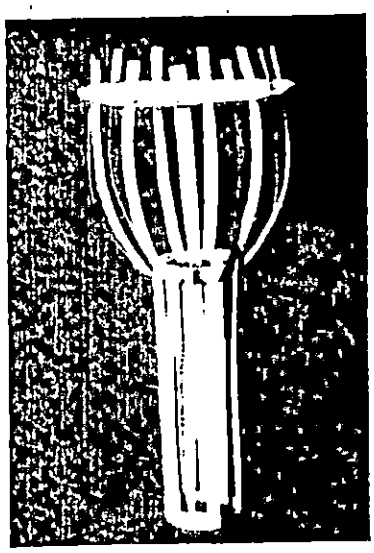
230 V



231 L

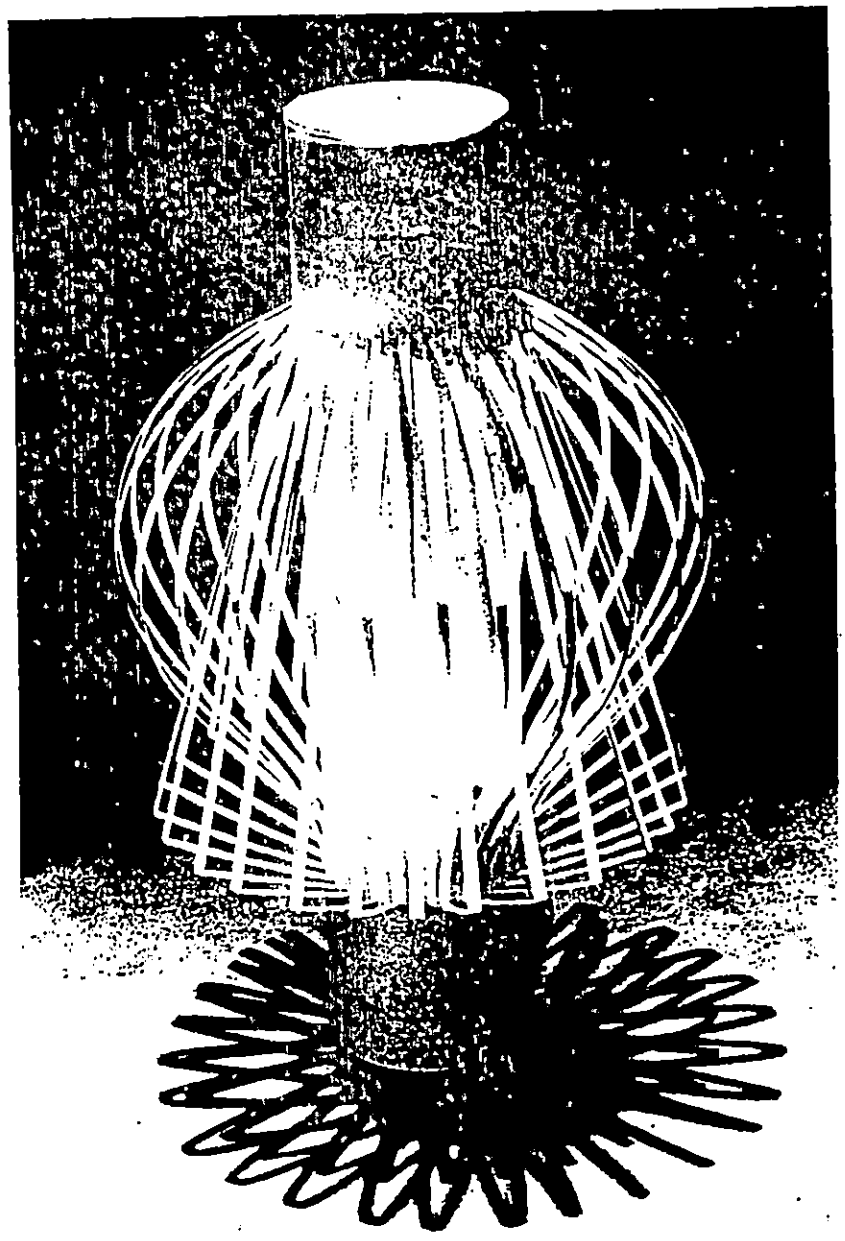
232 V

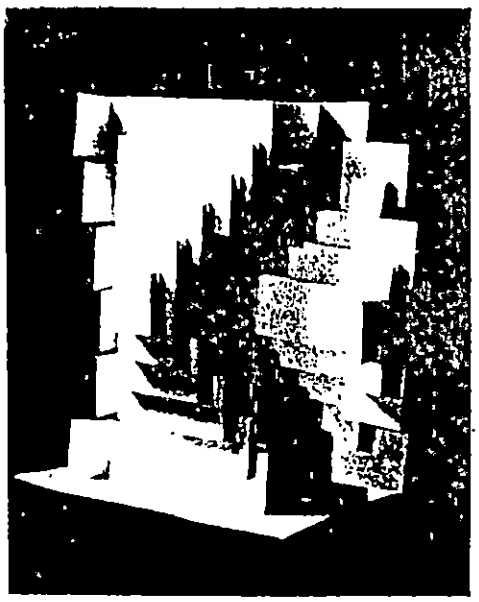
233 V



234 V

res 232-3, 235: completely new
s have been achieved by creasing.
an invitation to the inventive!
e 234: strips, pulled out of a piece
lled paper, are joined at the top
a circular lid
e 236: again a variation of the
der whose shape has been made
evere by pulling in the upper and
edges with strips of paper
xamples shown on pages 76-79 can
e a whole series of lanterns, etc.
e columns of lit-up cylinders can
nstructed for garden parties, etc.
dvisable to use an inner cylinder
nsparent paper where the outer
have been pierced to any extent.





237 V

238 V

239 V

uilding

ORKING WITH STRIPS OF CARDBOARD

t out strips of cardboard. The task is to cut into these strips up to half their width, and to join them at these ints, thus forming structures without the use of glue or paste.

is advisable to start with strips of equal width, and to make the transition to strips of varying width very dual.

e strips can also be folded at right angles or combined to simple forms, which are then used for building. re, too, it is most important to keep within clearly defined limitations.

BUILDING WITH FOLDED PAPER STRIPS

Strips are cut out of white paper (writing paper, tracing paper or drawing paper) and folded lengthways to form right angles (mark line with a knife when using drawing paper).

Number, length and width of paper strips, as well as the type of building, are laid down by the rules of the game. Some tasks might be 'upward movement', 'overhanging upper storeys over a small base', 'horizontal over a vertical base', a 'rhythmic arrangement of forms of two, three or more sizes'.

The strips must be cleanly joined with a little paste.

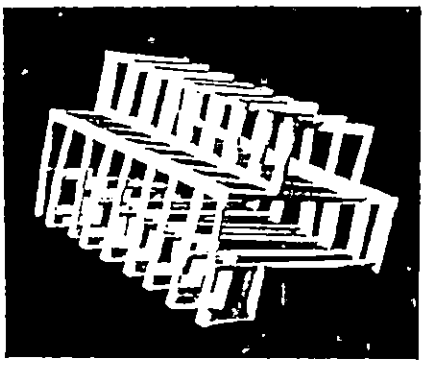
The link between projects of this kind and building in metal is obvious. The structural elements—angle irons, T-bars (obtained by joining two angle irons), steel joists, etc.—are the same for both.

Almost anything can be made, from simple buildings to machines in working order. The illustrations on page 83 suggest some possibilities.

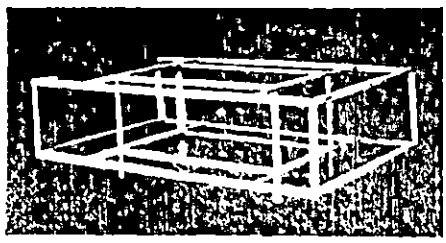
Tasks of this kind are also very suitable for teamwork, each set of parts being entrusted to a group of students. This can be a useful discipline in craftsmanship and accuracy, because bad work is likely to be rejected by other members of the group.

Figure 241: a simple, well-proportioned structure

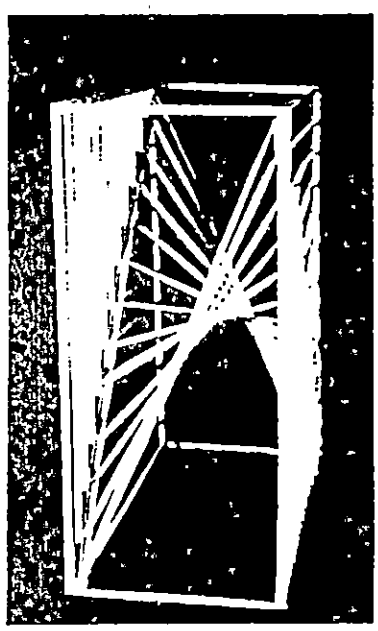
Figure 245: giant wheel, rotated by a simple weight-and-roller mechanism (the roller is also made of paper or cardboard)



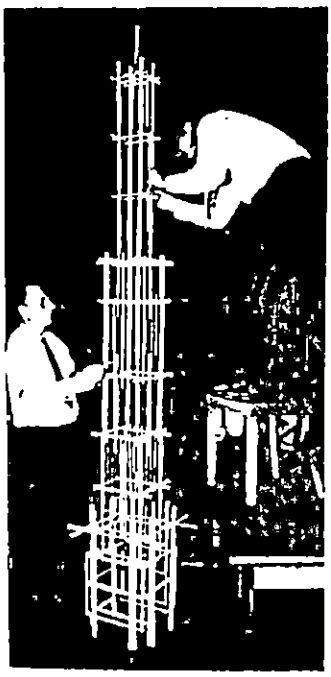
240 V



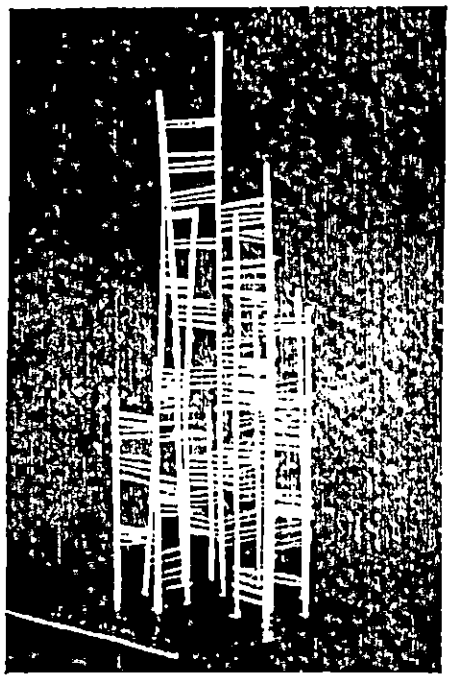
241 V



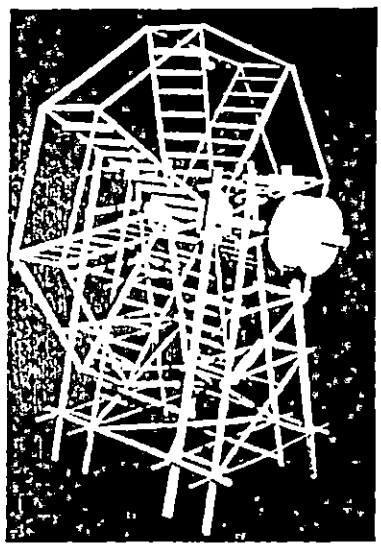
242 V



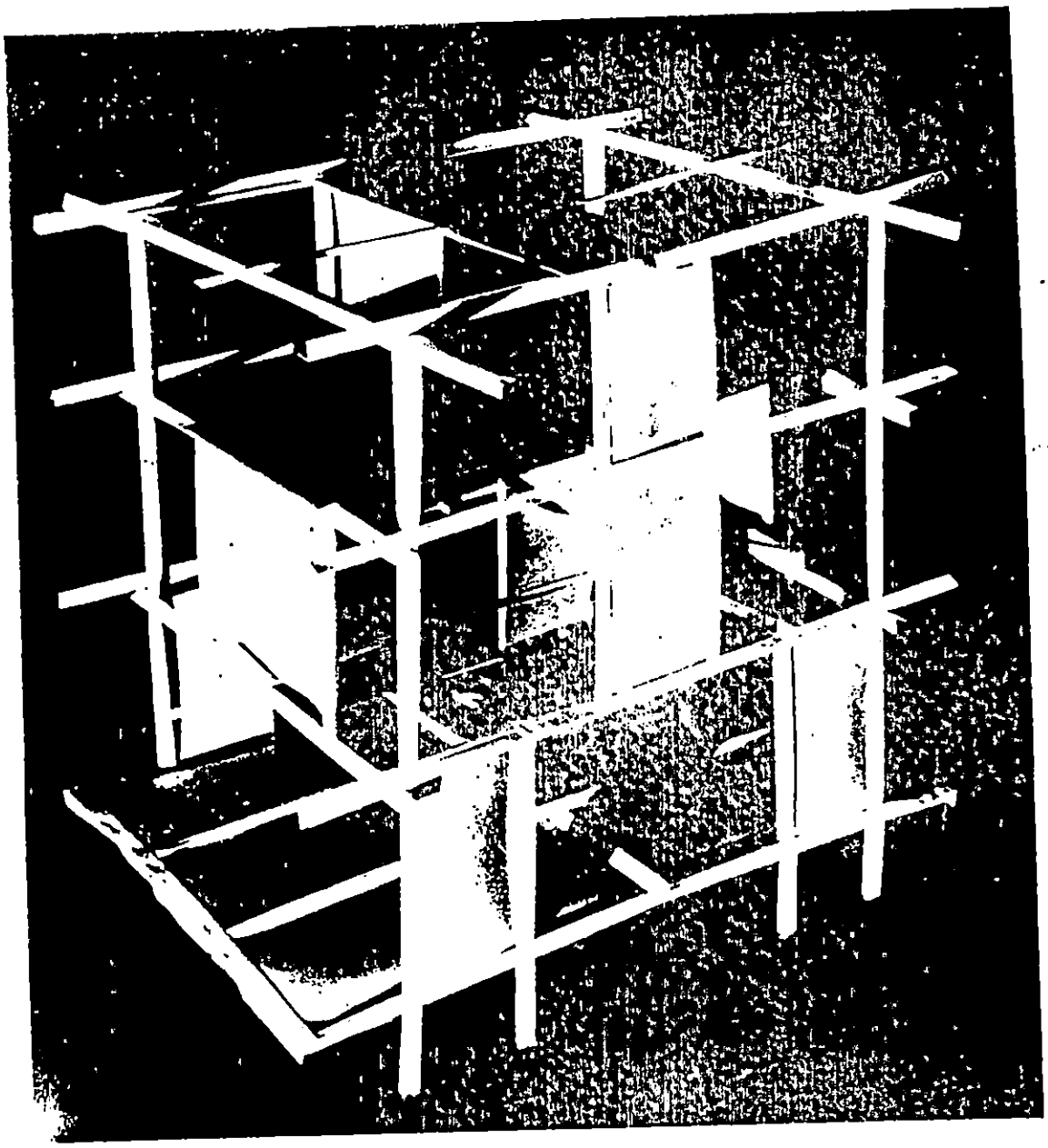
243 L



244 V

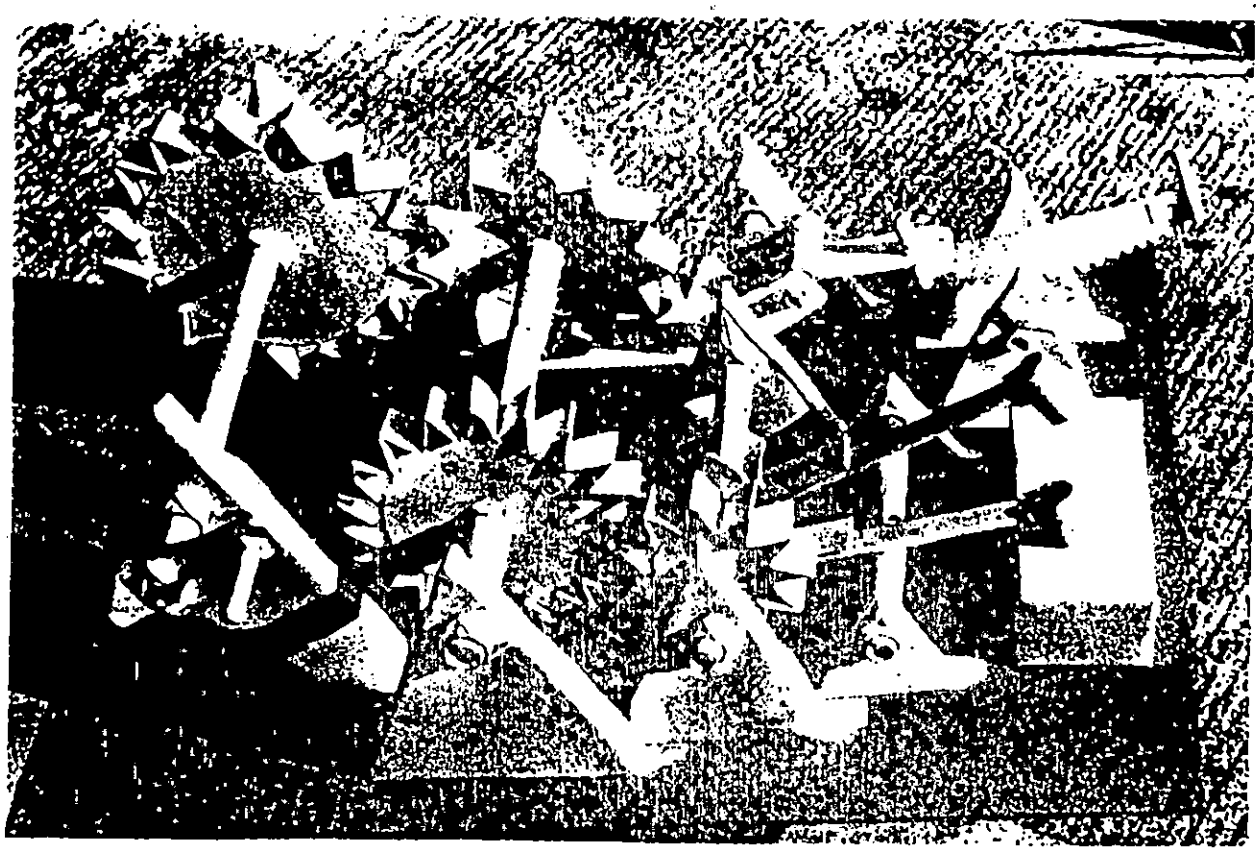


245 L



246 L —

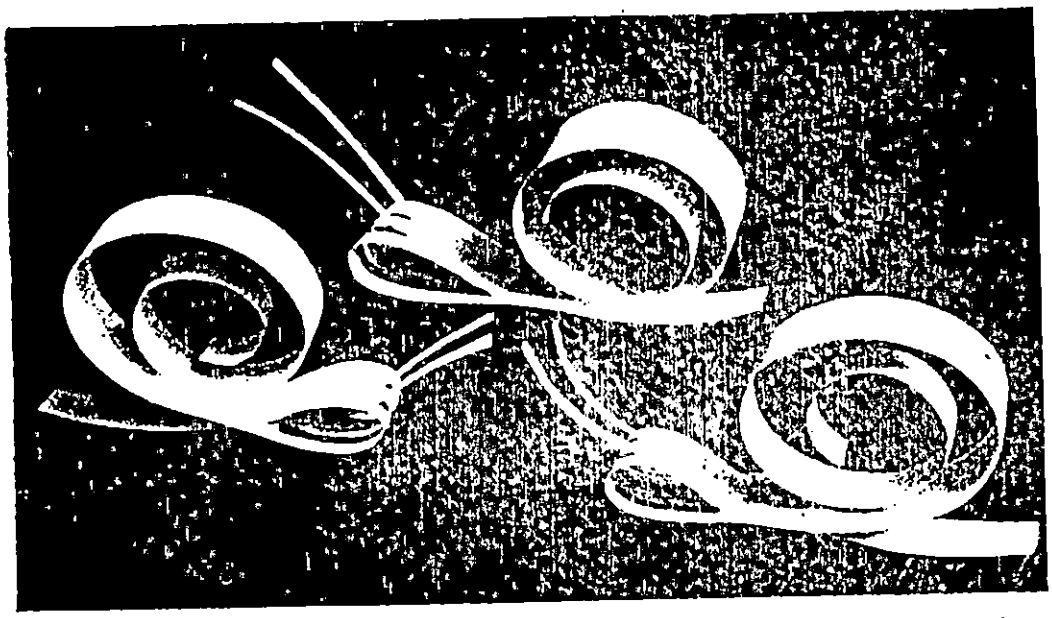
igure 246: scaffolding with inset coloured panels



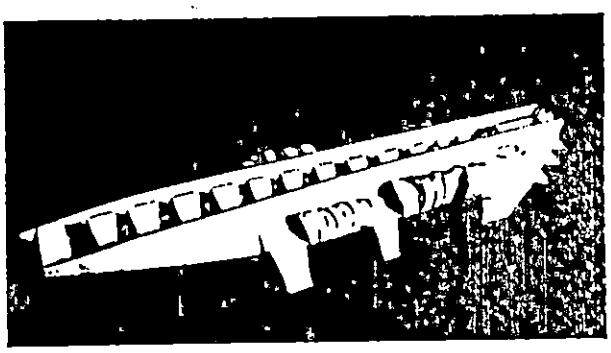
247 J 14

A machine with a difference: for once not the symbol of utilitarianism, but a toy with no function but to give pleasure. Today, children are very mechanically minded. The construction of a machine of this kind is a particularly suitable task for the adolescent; by stimulating inventiveness, attention is diverted from an adult interest in usefulness and profit.

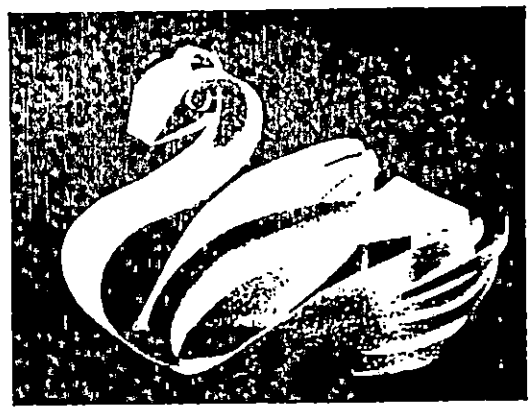
The machine shown above was thought out and built by a fourteen-year-old boy.



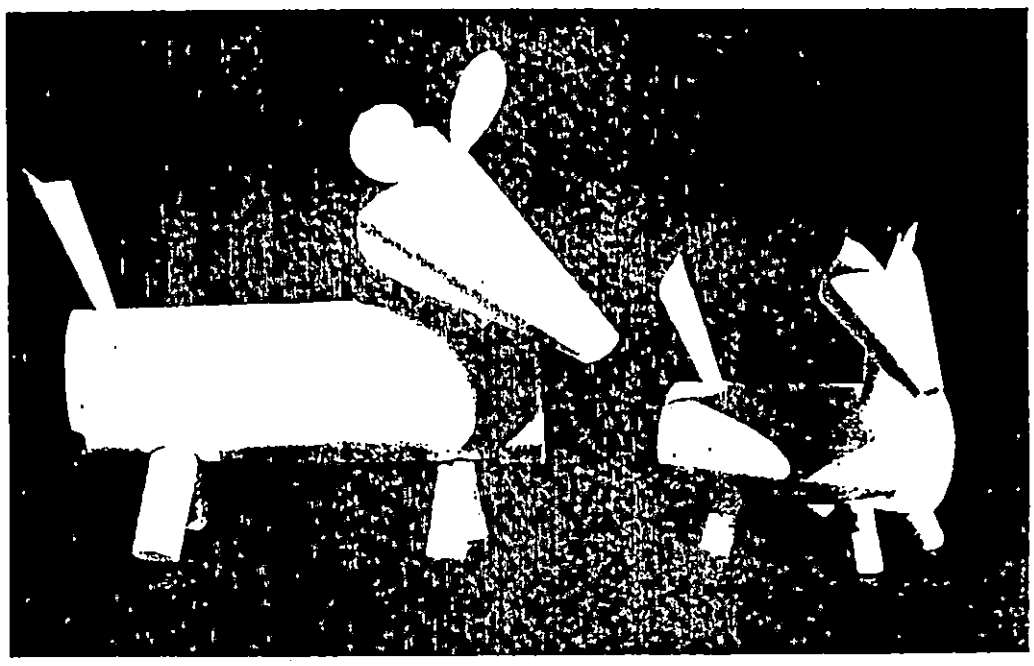
248 L



249 V



250 L



251 J 14

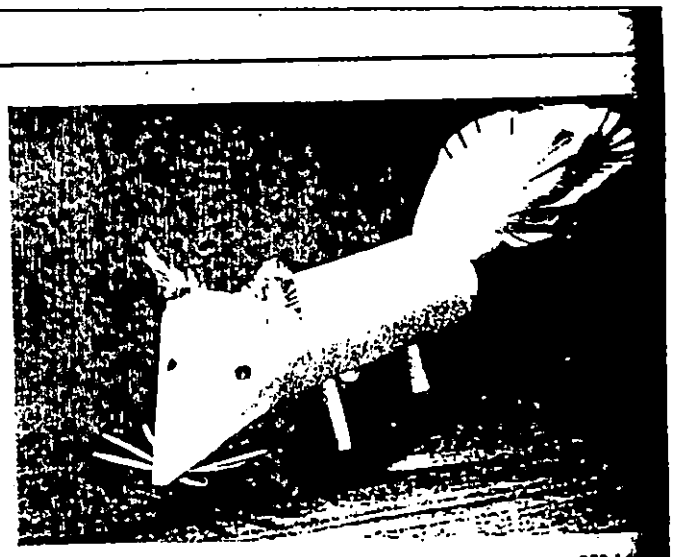
Natural forms

Figures 248-50: how to develop natural forms from basic components. These creatures must be made without adding, taking away, or using mechanical aids (glue, etc.).

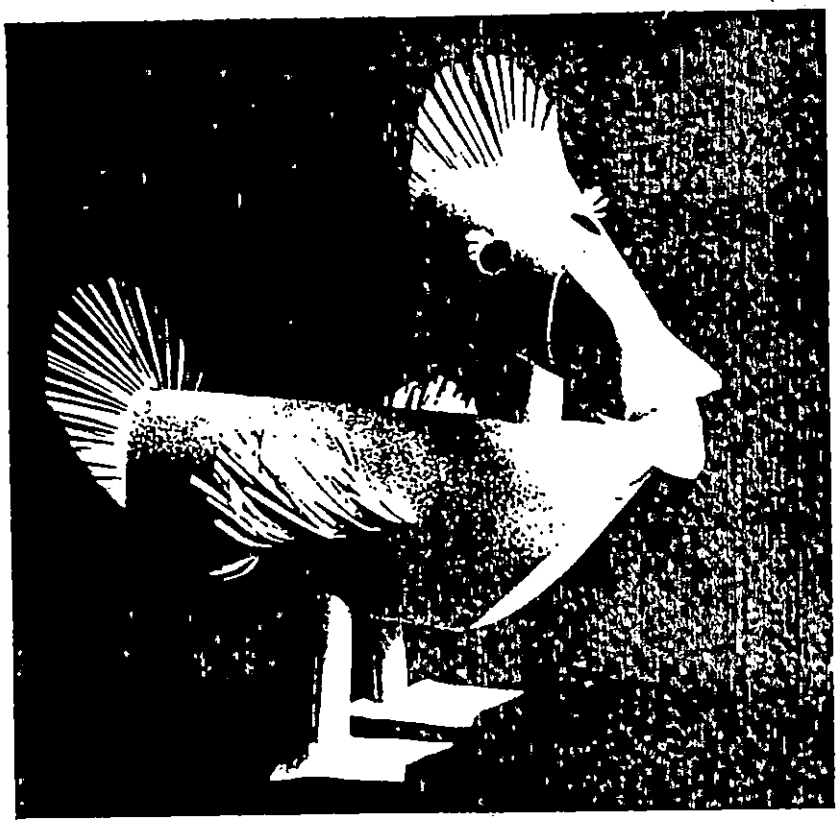
The snails were made from strips of paper, the insect was developed out of the rectangle, the swan out of a specially cut sheet.

Figures 251-61: here, the basic form is the tube (cylinder). First of all, a certain number of tubes must be made (narrow, wide, pointed, funnel-shaped, etc.). The most suitable material is thin drawing paper, rolled round a pencil or pen-holder and stuck together at the edges

252 M 13



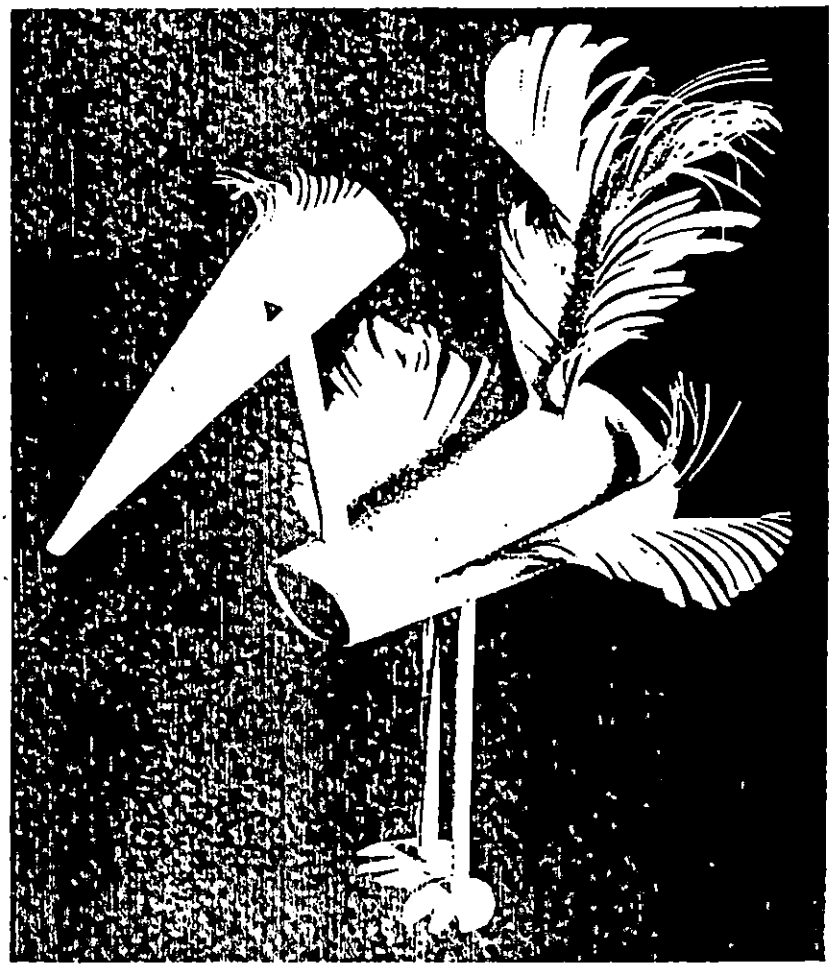
253 J



255 M 15

254 J

256 J

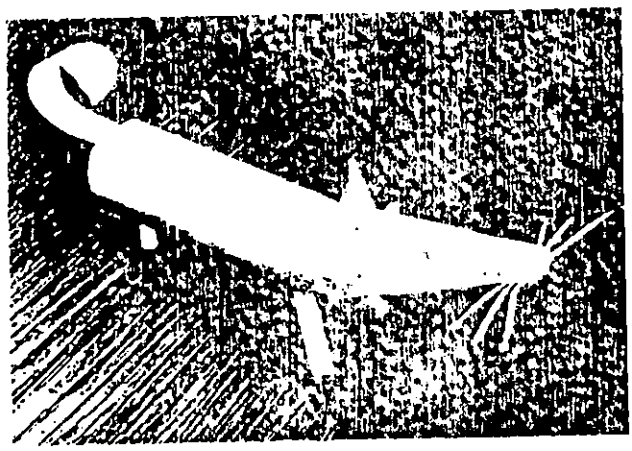


257 J 15

The tubes are then joined. In the case of the animals illustrated here, the students were allowed to make further cuts, insertions and creases, etc.

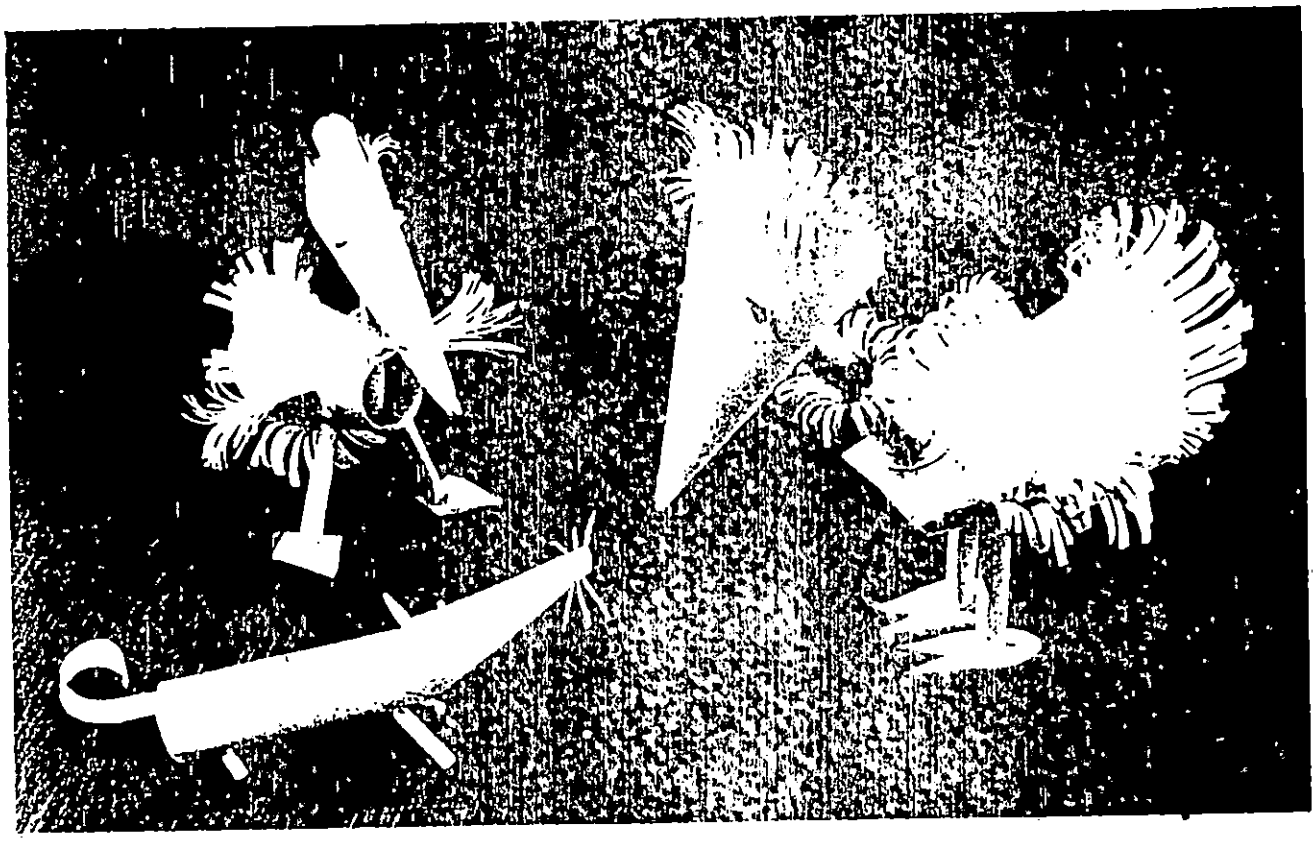
Figures. 258-61: these animals are movable and can change their expressions quite easily. Children could make a whole farmyard together

258 M 15



259 J 12

260 J 15



262 M 15

263 V

264 M 15

265 V

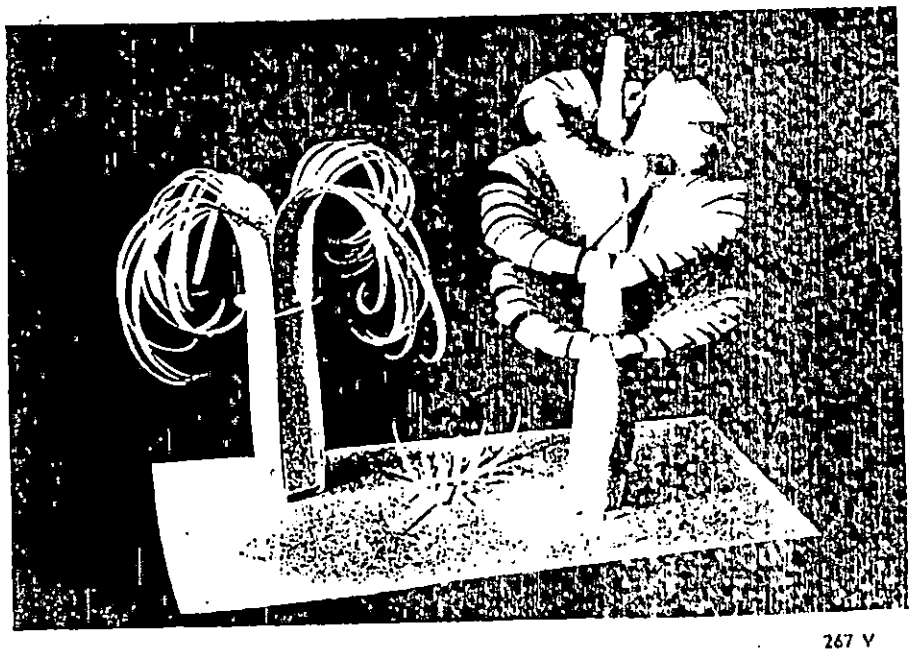
The trees shown on pages 91 and 92 were made in different ways. The simplest way is to roll up a rectangle (or triangle) which has been cut into like a comb along its base. The strips will curl if pressed quickly with the back of a knife

Figure 264: rings of various sizes, cut into at the edges and slid over a cone

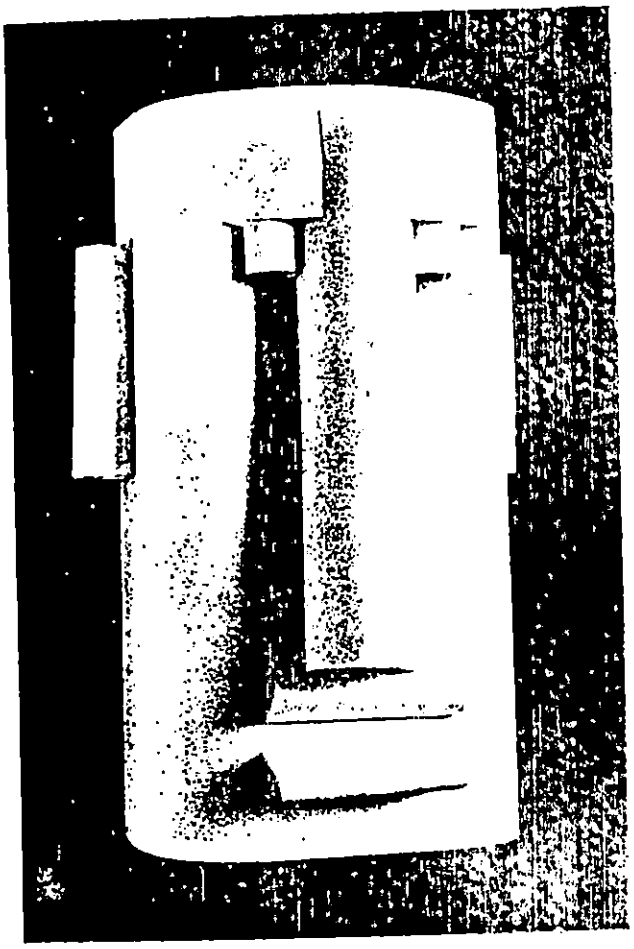
Figure 265: a tube, with leaves stuck into it

The reader can discover the stages of figure 267 for himself

266 J + M 11



267 V

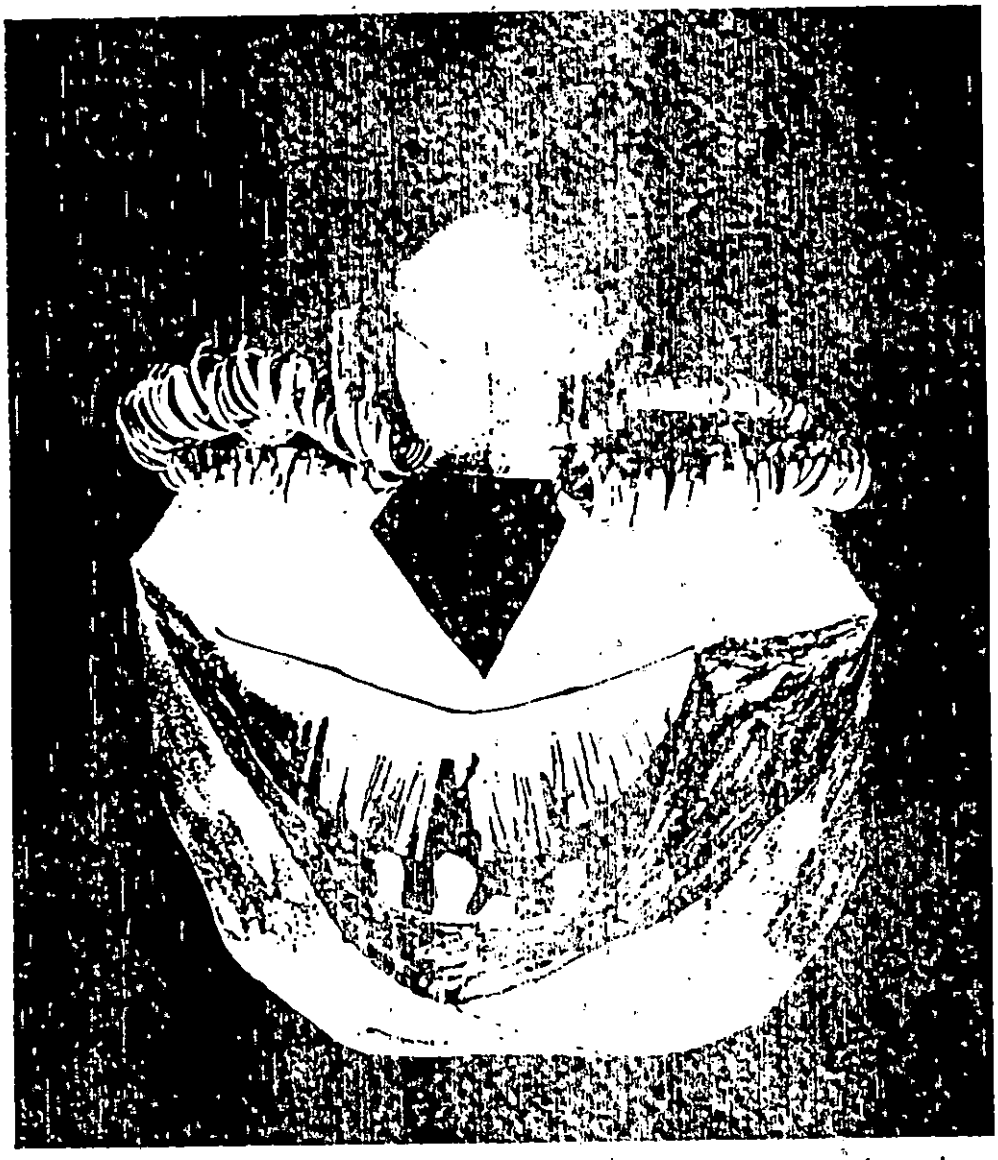


268 J 13

269 J 13

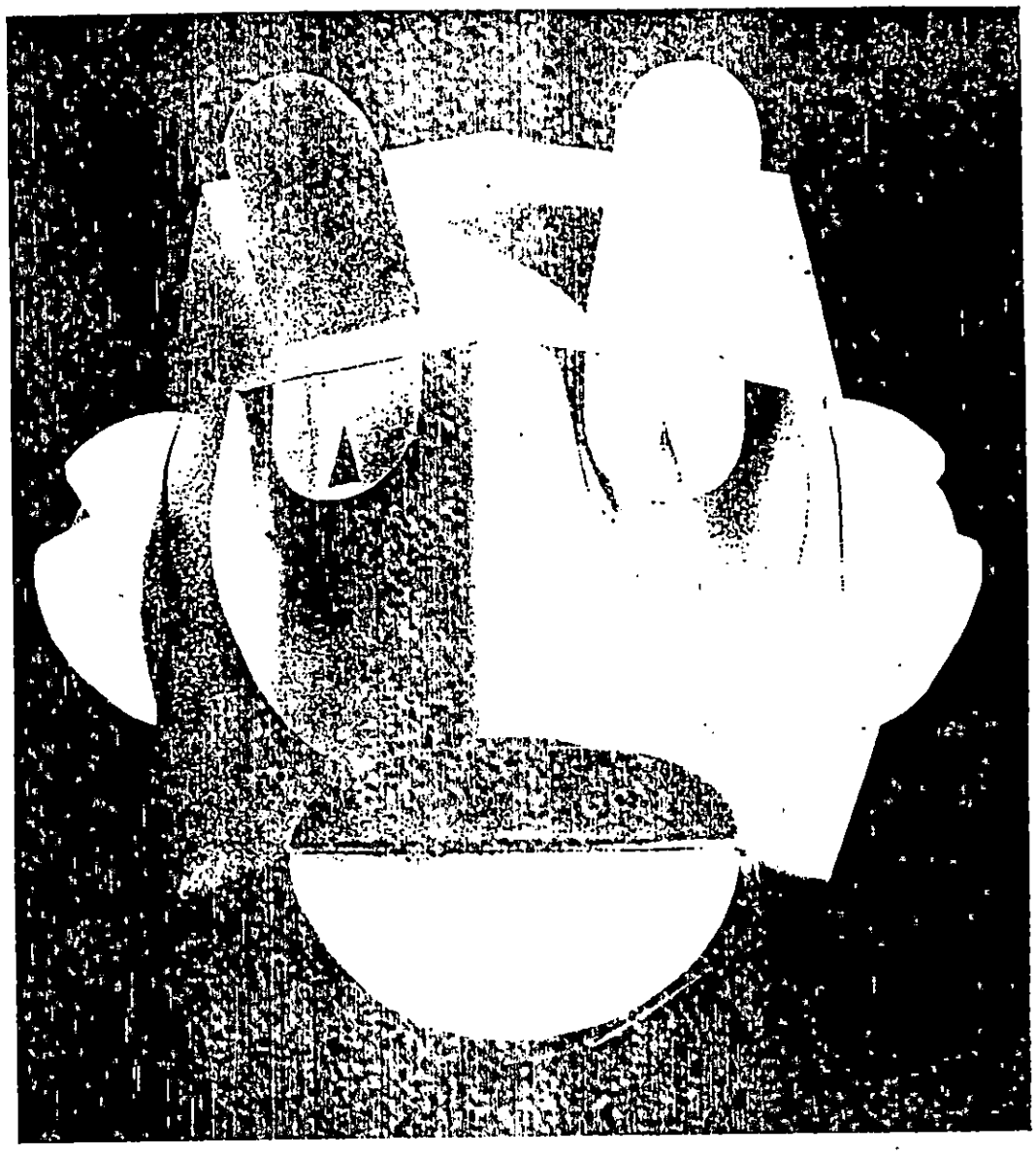
Making faces from paper is a rewarding task.

Figures 268-9: a sheet of drawing paper was curved to form a half-cylinder like a vault. The rules demanded that all the forms used for eyes, ears, nose and mouth should be related to the cylinder or the circle, although extra eyebrows and beard and moustache were permitted



270 J 14

A mask made by cutting in and folding out. Care must be taken when using water colours, because damp easily makes the paper soft. Pasting on pieces of coloured paper is more appropriate to the material and strengthens the form



271 V

The work of an advanced student, achieved entirely through bending, cutting into and inserting. No glue or paste has been used

Buku 4
SOAL UJIAN DAN JAWABAN

KERAJINAN KERTAS

Oleh :
Drs. Ramalis Hakim

JURUSAN PENDIDIKAN SENI RUPA DAN KETERAMPILAN KERAJINAN
FAKULTAS PENDIDIKAN BAHASA DAN SENI
INSTITUT KEGURUAN DAN ILMU PENDIDIKAN
PADANG - 1989

DAFTAR ISI

Soal-soal Tentamen Mid Semester 1

Kunci Jawaban Soal-soal Tentaman Mid Semester. 2

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Kunci Jawaban Soal-Soal Tentamen Semester ... 6

SOAL-SOAL TENTAMEN MID SEMESTER JULI-DESEMBER 89

MATA KULIAH: KERAJINAN KERTAS

Essei : Bobot 100 %

1. Jelaskanlah pengertian kerajinan secara umum dan jelaskan pula ciri-ciri dari kerajinan tersebut.
2. Jelaskanlah Pengertian bahan pokok dan bahan pelengkap dalam kerajinan kertas dan dua macam teknik dasar dari kerajinan kertas.
3. Buatlah rancangan sebuah karya kerajinan kertas memakai teknik Cutout dengan motif tumbuh-tumbuhan atau binatang, ketentuan kerja sebagai berikut:
   a. Bahan Kertas A 10
   b. Ukuran disain 10 X 25 X 4 lipatan
   c. Disain meliputi tahap kerja dan keterangan uraian yang jelas.

KUNCI JAWABAN TENTAMEN MID SEMESTER

MATA KULIAH: KERAJINAN KERTAS

Program D3

1. Pengertian kerajinan:

Pengertian kerajiaan (handicraft) dalam Encyclopedia Britanica terbitan tahun 1966 menyebutkan bahwa :

" Handicraft we are originality based on here production for home " but soon surplus items werw tradet and more elaberate production and distribution proces influenced the goods made. Disamping itu handicraft juga dapat diartikan sebagai "..... manual skills for making usable products graced with intertional visual appeal ".

Dalam pengertian yang sederhana dapat diketahui bahwa handicraft itu adalah upaya menusia dalam sesuatu benda dengan mempergunakan tangan.

Ciri-ciri kerajinan :

a. Kerajinan selalu melibatkan adanya perbedaan antara peralatan dan tujuan, yang masing-masing itu tergambar dengan jelas sebagai sesuatu yang berlainan namun saling berkaitan. Istilah "peralatan" secara bebas melekat pada benda-benda yang dipergunakan untuk mencapai tujuan.

b. Kerajinan itu melibatkan adanya suatu perbedaan antara perencanaan dan pelaksanaan. Hasil yang akan diperoleh sudah dipikirkan sebelum sampai pada perencanaan dan pelaksanaannya.

c. Alat dan tujuan, di dalam proses perencanaan berhubungan searah (sejalan); sedang dalam proses pelaksanaan

nya berlainan arah. Didalam perencanaan, tujuan lebih dahulu ada daripada alatnya. Tujuan itu harus di pikirkan lebih dahulu, sesudah itu baru alatnya. Di dalam pelaksanaannya, alat itu muncul lebih dahulu, sedang tujuannya dicapai lewat alat-alat itu.

d. Ada perbedaan antara bahan dasar dan produk jadi. Kerajinan itu selalu dibentuk atas sesuatu, dan bertujuan untuk mengubah bentuk itu menjadi sesuatu yang lain/berbeda. Perubahan bentuk itu bermula dari bahan dasar dan berakhir menjadi produk jadi. Bahan dasar itu sudah tersedia dalam bentuk jadi sebelum penanganan khusus dari kerajinan itu dimulai.

e. Adanya perbedaan antara bentuk dan materi/bahan. Materi adalah apa yang dalam bahan dasar dan dalam produk jadinya sama. Bentuk itu adalah apa yang berbeda/lain, bentuk dari kerajinan yang berubah.

2. Pengertian bahan pokok dan bahan pelengkap dalam kerajinan kertas:

Bahan pokok yang fungsi serta keberadaanya tidak dapat digantikan oleh bahan lain, dan jika diganti nama produk atau hasil jadi akan berobah pula.

Sedangkan bahan pelengkap, fungsi dan peranannya dapat digantikan oleh bahan yang lain asal tujuan produksi tercapai.

Dua macam teknik dasar yang terdapat dalam kerajinan kertas adalah tehnik melipat dan teknik memotong.

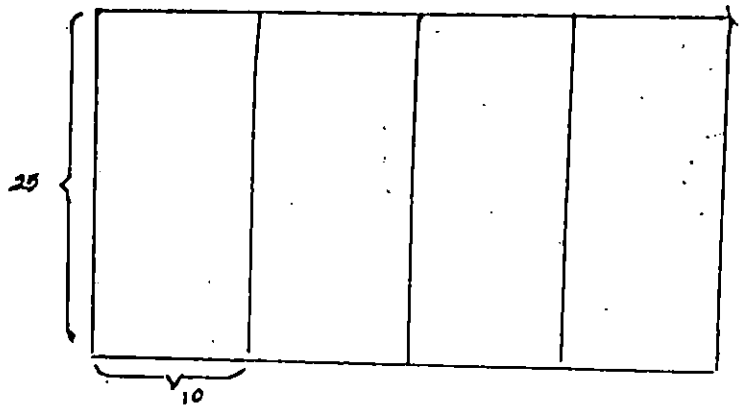
Teknik melipat yaitu mempertemukan dua permukaan atau lebih dengan cara mematahkan satu sisi.

Sedangkan memotong yang dimaksud disini adalah memisahkan

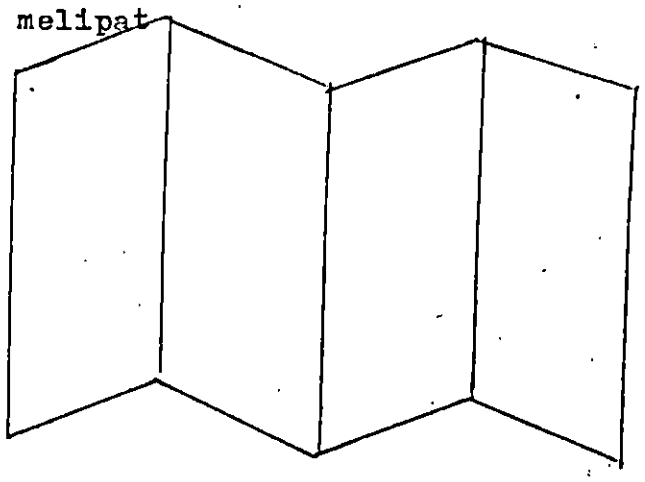
satu bahagian menjadi beberap bahagian yang pada mulanya dalam keadaan utuh (satu).

3. Rancangan untuk teknik Cutout:

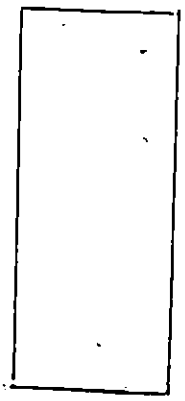
ukuran kertas



melipat



membuat motif kemudian dipotong.



KUNCI JAWABAN SOAL TENTAMEN SEMESTER

MATA KULIAH : KERAJINAN KERTAS

I. Teori

1. Pengertian kerajinan kertas secara umum:
   Ketrampilan menciptakan produk kerajinan yang bahan pokoknya kertas, bernilai estetis dan terpakai dengan teknik dasarnya adalah melipat, memotong, menggores, menempel dan menyambung.

2. 3 Aspek yang dibutuhkan dalam kerajinan kertas adalah:
   a. Ide/gagasan adalah sangat penting dalam rangka menciptakan karya kerajinan yang bermutu.
   b. Bahan dan alat adalah sarana terujudnya ide, terutama karya kerajinan kertas .
   c. Kreativitas adalah faktor yang mendorong seorang pembuat benda kerajinan berkembang daya ciptanya untuk menemukan bentuk-bentuk baru.

3. Fungsi kerajinan kertas :
   a. Fungsi pakai : adalah karya kerajinan berperan guna untuk pelengkap kebutuhan fisik dengan perkataan lain dapat dipakai sebagai kebutuhan hidup yang bersifat fisik.
   b. Fungsi estetis : adalah karya kerajinan berperan memenuhi kebutuhan keindahan dari setiap orang yang menginginkan.

4. Tahap perencanaan/disain adalah sebagai berikut: (perhatikan bagan berikutnya)